UNITED STATES
SECURITIES AND EXCHANGE
COMMISSION WASHINGTON, D.C. 20549

FORM 10-Q

☒ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the Quarterly Period Ended September 30, 2020

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the Transition Period From ________ to ________

Commission File Number: 001-36338

22nd Century Group, Inc.

(Exact name of registrant as specified in its charter)

Nevada	98-0468420
(State or other jurisdiction of incorporation)	(IRS Employer Identification No.)

8560 Main Street, Suite 4, Williamsville, New York 14221
(Address of principal executive offices)

(716) 270-1523
(Registrant's telephone number, including area code)

Securities registered under Section 12(b) of the Act:

Title of each class	Ticker symbol	Name of Exchange on Which Registered
Common Stock, $0.00001 par value	XXII	NYSE American

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.
Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).
Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☐	Accelerated filer	☒
Non-accelerated filer	☐	Smaller reporting company	☒
		Emerging growth company	☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).
Yes ☐ No ☒

As of November 5, 2020, there were 138,859,193 shares of common stock issued and outstanding.

22nd CENTURY GROUP, INC.

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22nd CENTURY GROUP, INC. AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
(Unaudited)
($ in thousands)

	September 30, 2020	December 31, 2019
ASSETS		
Current Assets:		
Cash and cash equivalents	$ 1,542	$ 485
Short-term investment securities	25,276	38,477
Accounts receivable, net	1,559	867
Inventory, net	2,311	2,266
Prepaid expenses and other assets	2,401	648
Total current assets	33,089	42,743
Property, plant and equipment:		
Machinery and equipment, net	2,689	3,120
Operating leases right-of-use assets, net	572	602
Total property, plant and equipment	3,261	3,722
Other assets:		
Intangible assets, net	8,231	8,494
Investments	7,015	8,403
Convertible note	5,804	5,589
Total other assets	21,050	22,486
Total assets	$ 57,400	$ 68,951
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current liabilities:		
Notes payable	$ 1,523	$ 581
Operating lease obligations	339	220
Accounts payable	1,114	1,997
Accrued expenses	3,145	2,619
Accrued severance	423	359
Deferred income	—	5
Total current liabilities	6,544	5,781
Long-term liabilities:		
Notes payable	292	292
Operating lease obligations	233	382
Severance Obligations	294	446
Total long-term liabilities	819	1,120
Commitments and contingencies (Note 11)		
Shareholders' equity		
10,000,000 preferred shares, $.00001 par value		
300,000,000 common shares, $.00001 par value		
Capital stock issued and outstanding:		
138,859,193 common shares (138,362,809 at December 31, 2019)		
Common stock value	1	1
Capital in excess of par value	188,897	187,735
Accumulated other comprehensive (loss) income	139	7
Accumulated deficit	(139,000)	(125,693)
Total shareholders' equity	50,037	62,050
Total liabilities and shareholders' equity	$ 57,400	$ 68,951

See accompanying notes to consolidated financial statements.

22nd CENTURY GROUP, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE LOSS
(Unaudited)
($ in thousands except per-share data)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Revenue:				
Sale of products, net	$ 7,310	$ 6,462	$ 20,803	$ 18,571
Cost of goods sold (exclusive of depreciation shown separately below):				
Products	6,948	6,483	19,953	18,781
Gross profit (loss)	362	(21)	850	(210)
Operating expenses:				
Research and development	906	1,924	2,676	4,838
Research and development - MRTP	4	69	158	1,593
Sales, general and administrative	3,169	4,059	9,809	9,119
Impairment of intangible assets	—	1,142	146	1,142
Depreciation	160	158	473	440
Amortization	163	233	524	671
Total operating expenses	4,402	7,585	13,786	17,803
Operating loss	(4,040)	(7,606)	(12,936)	(18,013)
Other income (expense):				
Unrealized gain (loss) on investments	(429)	(2,959)	(562)	(1,410)
Impairment of stock warrant	—	—	(1,062)	—
Realized gain (loss) on short-term investment securities	—	90	—	146
Litigation settlement	—	—	—	(1,891)
Gain on the sale of machinery and equipment	1	—	1	87
Interest income, net	270	242	1,344	757
Interest expense	(23)	(12)	(54)	(36)
Total other income (expense)	(181)	(2,639)	(333)	(2,347)
Loss before income taxes	(4,221)	(10,245)	(13,269)	(20,360)
Income taxes	—	—	38	—
Net loss	$ (4,221)	$ (10,245)	$ (13,307)	$ (20,360)
Other comprehensive income (loss):				
Unrealized gain (loss) on short-term investment securities	87	3	132	239
Reclassification of gain to net loss	—	(90)	—	(146)
Other comprehensive income (loss)	87	(87)	132	93
Comprehensive loss	$ (4,134)	$ (10,332)	$ (13,175)	$ (20,267)
Net loss per common share - basic and diluted	$ (0.03)	$ (0.08)	$ (0.10)	$ (0.16)
Weighted average common shares outstanding - basic and diluted (in thousands)	138,857	125,420	138,774	124,912

See accompanying notes to consolidated financial statements.

22nd CENTURY GROUP, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN SHAREHOLDERS' EQUITY
(Unaudited)
($ in thousands except share data)

	Three and Nine Months Ended September 30, 2020					
	Common Shares Outstanding	Par Value of Common Shares	Capital in Excess of Par Value	Accumulated Other Comprehensive Income	Accumulated Deficit	Total Shareholders' Equity
Balance at December 31, 2019	**138,362,809**	**$ 1**	**$ 187,735**	**$ 7**	**$ (125,693)**	**$ 62,050**
Stock issued in connection with RSU vesting	491,384	—	—	—	—	—
Equity-based compensation	—	—	480	—	—	480
Unrealized gain (loss) on short-term investment securities	—	—	—	(196)	—	(196)
Reclassification of losses (gains) to net loss	—	—	—	3	—	3
Net loss	—	—	—	—	(4,029)	(4,029)
Balance at March 31, 2020	**138,854,193**	**$ 1**	**$ 188,215**	**$ (186)**	**$ (129,722)**	**$ 58,308**
Stock issued in connection with RSU vesting	—	—	—	—	—	—
Equity-based compensation	—	—	376	—	—	376
Unrealized gain (loss) on short-term investment securities	—	—	—	241	—	241
Reclassification of losses (gains) to net loss	—	—	—	(3)	—	(3)
Net loss	—	—	—	—	(5,057)	(5,057)
Balance at June 30, 2020	**138,854,193**	**$ 1**	**$ 188,591**	**$ 52**	**$ (134,779)**	**$ 53,865**
Stock issued in connection with RSU vesting	5,000	—	—	—	—	—
Equity-based compensation	—	—	306	—	—	306
Unrealized gain (loss) on short-term investment securities	—	—	—	87	—	87
Reclassification of losses (gains) to net loss	—	—	—	—	—	—
Net loss	—	—	—	—	(4,221)	(4,221)
Balance at September 30, 2020	**138,859,193**	**$ 1**	**$ 188,897**	**$ 139**	**$ (139,000)**	**$ 50,037**

	Three and Nine Months Ended September 30, 2019					
	Common Shares Outstanding	Par Value of Common Shares	Capital in Excess of Par Value	Accumulated Other Comprehensive Income	Accumulated Deficit	Total Shareholders' Equity
Balance at December 31, 2018	**124,642,593**	**$ 1**	**$ 170,392**	**$ 21**	**$ (99,134)**	**$ 71,280**
Stock issued in connection with option exercises	17,407	—	—	—	—	—
Equity-based compensation	—	—	449	—	—	449
Unrealized gain (loss) on short-term investment securities	—	—	—	147	—	147
Reclassification of losses (gains) to net loss	—	—	—	16	—	16
Net loss	—	—	—	—	(2,073)	(2,073)
Balance at March 31, 2019	**124,660,000**	**$ 1**	**$ 170,841**	**$ 184**	**$ (101,207)**	**$ 69,819**
Stock issued in connection with option exercises	13,936	—	—	—	—	—
Equity-based compensation	—	—	517	—	—	517
Unrealized gain (loss) on short-term investment securities	—	—	—	89	—	89
Reclassification of losses (gains) to net loss	—	—	—	(72)	—	(72)
Net loss	—	—	—	—	(8,042)	(8,042)
Balance at June 30, 2019	**124,673,936**	**$ 1**	**$ 171,358**	**$ 201**	**$ (109,249)**	**$ 62,311**
Stock issued in connection with option exercises	8,645	—	—	—	—	—
Stock issued in connection with RSU vesting	100,000	—	—	—	—	—
Stock issued in connection with litigation settlement	990,000	—	1,891	—	—	1,891
Equity-based compensation	—	—	1,440	—	—	1,440
Unrealized gain (loss) on short-term investment securities	—	—	—	3	—	3
Reclassification of losses (gains) to net loss	—	—	—	(90)	—	(90)
Net loss	—	—	—	—	(10,245)	(10,245)
Balance at September 30, 2019	**125,772,581**	**$ 1**	**$ 174,689**	**$ 114**	**$ (119,494)**	**$ 55,310**

See accompanying notes to consolidated financial statements.

22nd CENTURY GROUP, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(Unaudited)
($ in thousands)

	Nine Months Ended September 30, 2020	Nine Months Ended September 30, 2019
Cash flows from operating activities:		
Net loss	$ (13,307)	$ (20,360)
Adjustments to reconcile net loss to cash used in operating activities:		
Impairment of intangible assets	146	1,142
Impairment of stock warrant	1,062	—
Amortization and depreciation	810	932
Amortization of license fees	187	179
Amortization of ROU Asset	232	159
Unrealized (gain) loss on investment	562	1,410
Realized (gain) loss on short-term investment securities	—	(146)
Litigation settlement	—	1,891
Gain on the sale of machinery and equipment	(1)	(87)
Accretion of non cash interest expense	34	33
Accretion of non cash interest income	(256)	—
Equity-based employee compensation expense	1,162	2,406
Inventory write-off	219	882
(Increase) decrease in assets:		
Accounts receivable	(692)	97
Inventory	(264)	(222)
Prepaid expenses and other assets	(1,754)	55
Increase (decrease) in liabilities:		
Operating lease obligations	(228)	(159)
Accounts payable	(924)	(1,082)
Accrued expenses	481	(30)
Accrued severance	(88)	691
Deferred income	(5)	511
Net cash provided by (used in) operating activities	(12,624)	(11,698)
Cash flows from investing activities:		
Acquisition of patents and trademarks	(342)	(444)
Acquisition of machinery and equipment	(33)	(499)
Proceeds from the sale of machinery and equipment	—	166
Sales and maturities of short-term investment securities	28,960	15,966
Purchase of short-term investment securities	(15,830)	(3,079)
Net cash provided by (used in) investing activities	12,755	12,110
Cash flows from financing activities:		
Payment on note payable	(1,269)	(400)
Proceeds from note payable issuance	2,195	—
Proceeds from SBA loan	1,183	—
Repayment of SBA loan	(1,183)	—
Net cash provided by (used in) financing activities	926	(400)
Net increase (decrease) in cash and cash equivalents	1,057	12
Cash and cash equivalents - beginning of period	485	605
Cash and cash equivalents - end of period	$ 1,542	$ 617
Supplemental disclosures of cash flow information:		
Net cash paid for:		
Cash paid during the period for interest	$ 19	$ 3
Non-cash transactions:		
Patent and trademark additions included in accounts payable	$ 19	$ 154
Machinery and equipment additions included in accounts payable	$ 9	$ —
Right-of-use assets and corresponding operating lease obligations	$ 198	$ 814
Patent and trademark additions included in accrued expenses	$ 46	$ —

See accompanying notes to consolidated financial statements.

22nd CENTURY GROUP, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
September 30, 2020
(Unaudited)
Amounts in thousands, except for share and per-share data

NOTE 1. - NATURE OF BUSINESS AND SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of Presentation - The accompanying unaudited consolidated financial statements have been prepared in accordance with U.S. generally accepted accounting principles ("GAAP") for interim financial information and with the instructions to Form 10-Q. Accordingly, they do not include all the information and footnotes required by GAAP for complete financial statements. In the opinion of management, all adjustments consisting of normal recurring accruals considered necessary for a fair and non-misleading presentation of the financial statements have been included.

Operating results for the nine months ended September 30, 2020 are not necessarily indicative of the results that may be expected for the year ending December 31, 2020. The balance sheet as of December 31, 2019 has been derived from the audited consolidated financial statements at that date but does not include all the information and footnotes required by GAAP for complete financial statements.

These interim consolidated financial statements should be read in conjunction with the December 31, 2019 audited consolidated financial statements and the notes thereto contained in our Annual Report on Form 10-K for the year ended December 31, 2019, as filed with the Securities and Exchange Commission on March 11, 2020.

Principles of Consolidation - The accompanying consolidated financial statements include the accounts of 22nd Century Group, Inc. ("22nd Century Group"), its three wholly-owned subsidiaries, 22nd Century Limited, LLC ("22nd Century Ltd"), NASCO Products, LLC ("NASCO"), and Botanical Genetics, LLC ("Botanical Genetics"), and two wholly-owned subsidiaries of 22nd Century Ltd, Goodrich Tobacco Company, LLC ("Goodrich Tobacco") and Heracles Pharmaceuticals, LLC ("Heracles Pharma") (collectively, "the Company"). All intercompany accounts and transactions have been eliminated.

Nature of Business - 22nd Century Group is a leading biotechnology company developing disruptive plant-based solutions for the life science, consumer product, and pharmaceutical markets. The Company is focused on technology that allows it to alter the level of nicotine and other nicotinic alkaloids in tobacco plants and the levels of cannabinoids and terpenes in hemp/cannabis plants through genetic engineering and modern plant breeding techniques. Goodrich Tobacco and Heracles Pharma are business units for the Company's potential modified risk tobacco products. NASCO is a federally licensed tobacco products manufacturer, a subsequent participating member under the tobacco Master Settlement Agreement ("MSA") between the tobacco industry and the settling states under the MSA and operates the Company's tobacco products manufacturing business in North Carolina. Botanical Genetics is a wholly-owned subsidiary of 22nd Century Group that performs research and development related to the Company's hemp business.

Reclassifications - Certain items in the 2019 financial statements have been reclassified to conform to the 2020 classification. During 2020, the Company expanded its research and development expense line item into two line items in the operating expense section of the Company's Consolidated Statements of Operations and Comprehensive Loss: (i) Research and development and (ii) Research and development—MRTP. The comparative classifications for 2019 have been reclassified to conform to the new presentation.

COVID-19 Pandemic – The COVID-19 pandemic has caused some disruption to our business and poses a risk to our future business, including delays by third party providers of goods or services to our business, interruptions to our sales, research and development, and administrative activities, and disruptions to our manufacturing operations. Similarly, state or federal authorities may also be affected in their capacity or capability to operate as normal and may impact the timeline of product authorizations which may disrupt our business plans.

Our Williamsville, NY corporate office and our R&D laboratory in Buffalo, NY remain open and are currently operating under strict safety protocols in accordance with New York State's reopening guidelines. These protocols include physical distancing, mandatory face coverings, disinfection of surfaces, and other health and safety measures. We continue to encourage remote work arrangements by our employees where job duties permit. Our laboratory in Buffalo is working to almost full capacity while some of our external research and development partners are operating on a modified or limited schedule during this period of the pandemic. The temporary closure of our laboratory and the interruption to our workflow related to COVID-19 has had a minimum impact on our research operations.

Our NASCO production facility in North Carolina remains open and, despite the pandemic, we have been able to fulfill sales orders in a timely manner. The safety and well-being of our employees remains a top priority and we to continue monitor and operate in line with local, state, and federal safety guidelines. An outbreak at our production facility, or disruption in our supply chain, could cause us to slow or temporarily cease our manufacturing operations.

Our executive leadership team and staff are monitoring this evolving situation and its impacts on our business. We will continue to monitor the local, state and federal guidance regarding our business practices.

Use of Estimates - The preparation of financial statements in conformity with accounting principles generally accepted in the U.S. requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of income and expenses during the reporting period. Actual results could differ from those estimates.

Fair Value of Financial Instruments - The Company's financial instruments include cash and cash equivalents, short-term investment securities, accounts receivable, investments, a convertible note receivable, accounts payable, accrued expenses, and notes payable. Other than for cash equivalents, short-term investment securities, certain investments, and convertible note receivable, fair value is assumed to approximate carrying values for these financial instruments, since they are short term in nature, they are receivable or payable on demand, or had stated interest rates that approximate the interest rates available to the Company as of the reporting date. The determination of the fair value of cash equivalents, short-term investment securities, investments, and convertible note receivable are discussed in Note 6.

Investments - Under ASU 2016-01, equity securities are recorded at fair value, with changes in fair value recorded through the statement of operations. Equity securities without a readily determinable market value are carried at cost less impairment, adjusted for observable price changes in orderly transactions for an identical or similar investment of the same issuer. The Company considers debt instruments as available-for-sale securities, and accordingly, all unrealized gains and losses incurred on the short-term investment securities (the adjustment to fair value) are recorded in other comprehensive income or loss on the Company's Consolidated Statements of Operations and Comprehensive Loss.

Stock Based Compensation - The Company uses a fair-value based method to determine compensation for all arrangements under which Company employees and others receive shares, restricted stock units or options to purchase common shares of the Company. Stock based compensation expense is recorded over the requisite service period based on estimates of probability and time of achieving milestones and vesting. For accounting purposes, the shares will be considered issued and outstanding upon vesting or risks of forfeiture expiring.

Income Taxes - For interim income tax reporting, due to a full valuation allowance on net deferred tax assets, no income tax expense or benefit is recorded unless it is an unusual or infrequently occurring item. The tax effects of unusual or infrequently occurring items, including changes in judgment about valuation allowances and effects of changes in tax laws or rates, are reported in the interim period in which they occur.

NOTE 2. - INVENTORY

Inventories are valued at the lower of historical cost or net realizable value. Cost is determined using an average cost method for tobacco leaf inventory and raw materials inventory and standard cost is primarily used for finished goods inventory. Inventories are evaluated to determine whether any amounts are not recoverable based on slow moving or obsolete condition and are written off or reserved as appropriate. During the three and nine months ended September 30, 2020, the Company wrote off inventory totaling $219 on the Company's Consolidated Statement of Operations and Comprehensive Loss ($58 included within research and development expenses and $161 included within cost of goods sold). During the three and nine months ended September 30, 2019, the Company wrote off inventory totaling $882 which is included within research and development expenses on the Company's Consolidated Statement of Operations and Comprehensive Loss.

Inventories at September 30, 2020 and December 31, 2019 consisted of the following:

	September 30, 2020	December 31, 2019
Inventory - tobacco leaf	$ 1,105	$ 1,178
Inventory - finished goods		
Cigarettes and filtered cigars	201	106
Inventory - raw materials		
Cigarette and filtered cigar components	1,105	1,082
Less: inventory reserve	(100)	(100)
	$ 2,311	$ 2,266

NOTE 3. - MACHINERY AND EQUIPMENT

Machinery and equipment at September 30, 2020 and December 31, 2019 consisted of the following:

	Useful Life	September 30, 2020	December 31, 2019
Cigarette manufacturing equipment	3 or 10 years	$ 4,892	$ 4,870
Office furniture, fixtures and equipment	5 Years	162	152
Laboratory equipment	5 Years	117	125
Leasehold improvements	6 Years	273	257
Less: accumulated depreciation		(2,755)	(2,284)
Machinery and equipment, net		$ 2,689	$ 3,120

Depreciation expense was $160 and $473 for the three and nine months ended September 30, 2020, respectively ($158 and $440 for the three and nine months ended September 30, 2019, respectively).

NOTE 4. - RIGHT-OF-USE ASSETS, LEASE OBLIGATIONS, AND OTHER LEASES

On January 1, 2019, the Company adopted ASU 2016-02, Subtopic ASC 842, Leases (the "new guidance") and elected to use the practical expedient which allowed the Company to carry forward the historical lease classifications of the existing leases as of adoption. Our lessee right of use (ROU) assets represent our right to use an underlying asset and our lease liabilities represent our obligation to make lease payments.

The Company leases a manufacturing facility and warehouse in North Carolina, a corporate office space in Williamsville, New York, and a laboratory space in Buffalo, New York. The ROU assets and lease liabilities for these operating leases are recognized as of the commencement date at the net present value of the fixed minimum lease payments for the lease term. The discount rate used is the interest rate implicit in the lease, if available, or the Company's incremental borrowing rate which is determined using a base line rate plus an applicable spread.

The following table summarizes the Company’s discount rate and remaining lease terms:

Weighted average remaining lease term in years	2.3
Weighted average discount rate	4.8 %

Future minimum lease payments as of September 30, 2020 are as follows:

2020	$	87
2021		324
2022		92
2023		88
2024		15
Total lease payments		606
Less: imputed interest		(34)
Total	$	572

NOTE 5. – INVESTMENTS & CONVERTIBLE NOTE RECEIVABLE

Investment in Panacea Life Sciences, Inc.

On December 3, 2019, the Company entered into a securities purchase agreement with Panacea Life Sciences, Inc. (“Panacea”) for$13,297 in exchange for a 15.8% ownership interest. The Company’s investment consists ofthree instruments: shares of Series B preferred stock (“preferred stock”); a convertible note receivable; and a warrant (“stock warrant”) to purchase additional shares of Series B preferred stock, to obtain 51% ownership of Panacea, at an exercise price of $2.344 per share. The convertible note receivable has a term offive years, bears interest of10% per annum, and can be converted to shares of Series B preferred stock at the Company’s discretion. The preferred stock carries an annual 10% cumulative dividend, compounded annually, and has an implicit put option after the fifth anniversary date so long that the stock warrants have not been exercised. The stock warrant may be exercised at any time after the fifth anniversary date and would be accelerated if Panacea achieves certain sales targets for two consecutive years. The Series B preferred stock also has equity preferences in the event of a liquidation, sale, or transfer of Panacea assets.

The convertible note receivable and the preferred stock investment are considered available for sale debt securities with a private company that is not traded in active markets. Since observable price quotations were not available at acquisition, fair value was estimated based on cost less an appropriate discount upon acquisition. The discount of each instrument is accreted into interest income over the respective term as shown within the Company’s Consolidated Statements of Operations and Comprehensive Loss. See Note 6 for additional information on these fair value measurements. The stock warrant was recorded at its cost basis in accordance with the practical expedient under ASU 2016-01.

In accordance with ASC 326-30-35 and ASC 321-35-3, credit loss risk of available-for-sale securities and impairment risk of investments recorded at cost should be evaluated if negative indicators are present. During 2020, the cannabidiol (CBD) industry has experienced an overall decline due to increased competition, FDA regulation uncertainty, and continued uncertainty from COVID-19—all relevant impairment indicators for the valuation of our Panacea investment. Based on the Company’s assessment, it was determined that no risk of credit loss existed for the available-for-sale debt security instruments as of September 30, 2020. As such, we concluded that the recorded value aligns with the expected cash flows of the instruments.

However, the Company determined that the recorded cost basis of the stock warrant exceeded its fair value due to the negative macroeconomic indicators mentioned above. As such, the Company recognized an impairment charge of $1,062 during the nine months ended September 30, 2020.

Investment in Aurora Cannabis, Inc.

The Company has an investment in Aurora Cannabis Inc. ("Aurora") stock warrants that are considered equity securities under ASC 321 – Investments – Equity Securities and a derivative instrument under ASC 815 – Derivatives and Hedging. The stock warrants are not designated as a hedging instrument, and in accordance with ASC 815, the Company's investment in stock warrants are recorded at fair value with changes in fair value recorded to unrealized gain/loss as shown within the Company's Consolidated Statements of Operations and Comprehensive Loss. See Note 6 for additional information on the fair value measurements.

The carrying value of the Company's investments at September 30, 2020 and December 31, 2019 consisted of the following:

	September 30, 2020	December 31, 2019
Aurora stock warrants	$ 111	$ 673
Panacea preferred stock	5,101	4,865
Panacea stock warrant	1,803	2,865
Total Investments	$ 7,015	$ 8,403
Convertible Note Receivable	$ 5,804	$ 5,589

NOTE 6. – FAIR VALUE MEASUREMENTS AND SHORT-TERM INVESTMENTS

FASB ASC 820 - "Fair Value Measurements and Disclosures" establishes a valuation hierarchy for disclosure of the inputs to valuation used to measure fair value. This hierarchy prioritizes the inputs into three broad levels as follows:

- Level 1 inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities;
- Level 2 inputs are quoted prices for similar assets and liabilities in active markets or inputs that are observable for the asset or liability, either directly or indirectly through market corroboration, for substantially the full term of the financial instrument; and
- Level 3 inputs are unobservable inputs based on the Company's own assumptions used to measure assets and liabilities at fair value.

A financial asset's or a financial liability's classification within the hierarchy is determined based on the lowest level input that is significant to the fair value measurement.

The following table presents information about our assets and liabilities measured at fair value as of September 30, 2020 and December 31, 2019, and indicates the fair value hierarchy of the valuation techniques the Company utilized to determine such fair value:

	Fair Value September 30, 2020			
	Level 1	Level 2	Level 3	Total
Assets				
Short-term investment securities:				
Money market funds	$ 5,111	$ —	$ —	$ 5,111
Corporate bonds	—	20,165	—	20,165
Total short-term investment securities	$ 5,111	$ 20,165	$ —	$ 25,276
Investment - Aurora stock warrants	$ —	$ —	$ 111	$ 111
Investment - Panacea preferred stock	$ —	$ —	$ 5,101	$ 5,101
Convertible note receivable	$ —	$ —	$ 5,804	$ 5,804

	Fair Value December 31, 2019			
	Level 1	Level 2	Level 3	Total
Assets				
Short-term investment securities:				
Money market funds	$ 12,146	$ —	$ —	$ 12,146
Corporate bonds	—	26,331	—	26,331
Total short-term investment securities	$ 12,146	$ 26,331	$ —	$ 38,477
Investment - Aurora stock warrants	$ —	$ —	$ 673	$ 673
Investment - Panacea preferred stock	$ —	$ —	$ 4,865	$ 4,865
Convertible note receivable	$ —	$ —	$ 5,589	$ 5,589

Money market mutual funds are valued at their daily closing price as reported by the fund. Money market mutual funds held by the Company are open-end mutual funds that are registered with the SEC that generally transact at a stable $1.00 Net Asset Value ("NAV") representing its estimated fair value. On a daily basis the fund's NAV is determined by the fund based on the amortized cost of the funds underlying investments.

Corporate bonds are valued using pricing models maximizing the use of observable inputs for similar securities.

The investment in the Aurora stock (ACB) warrants is measured at fair value using the Black-Scholes pricing model and is classified within Level 3 of the valuation hierarchy. The unobservable input is an estimated volatility factor of 134% and 83% as of September 30, 2020 and December 31, 2019, respectively. Therefore, changes in market volatility will impact the fair value measurement of our ACB investment.

A 20% increase or decrease in the volatility factor used as of September 30, 2020 would have the impact of increasing or decreasing the fair value measurement of the stock warrants by approximately $64. A 20% increase or decrease in the volatility factor used at December 31, 2019 would have the impact of increasing or decreasing the fair value measurement of the stock warrants by approximately $260.

The Panacea convertible note receivable and the preferred stock investment are considered available-for-sale debt securities with a private company that is not traded in active markets. Since observable price quotations were not available, fair value was estimated based on cost less an appropriate discount upon acquisition. The discount of each instrument is accreted into interest income over the respective term and will adjust the amortized cost basis of the investments.

The following table sets forth a summary of the changes in fair value of the Company's Level 3 investments for the nine months ended September 30, 2020:

Fair Value at December 31, 2019	$ 11,127
Unrealized loss as a result of change in fair value	(562)
Accretion of interest on Panacea Investment	451
Fair Value at September 30, 2020	$ 11,016

The following tables set forth a summary of the Company's available-for-sale debt securities from amortized cost basis to fair value as of September 30, 2020 and December 31, 2019:

	Available for Sale Debt Securities September 30, 2020			
	Amortized Cost Basis	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Corporate bonds	$ 20,026	$ 139	$ —	$ 20,165
Convertible note receivable	5,804	—	—	5,804
Investment - Panacea preferred stock	5,101	—	—	5,101
	$ 30,931	$ 139	$ —	$ 31,070

	Available for Sale Debt Securities December 31, 2019			
	Amortized Cost Basis	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Corporate bonds	$ 26,324	$ 64	$ (57)	$ 26,331
Convertible note receivable	5,589	—	—	5,589
Investment - Panacea preferred stock	4,865	—	—	4,865
	$ 36,778	$ 64	$ (57)	$ 36,785

The following table sets forth a summary of the Company's available-for-sale securities from amortized cost basis and fair value by contractual maturity as of September 30, 2020 and December 31, 2019:

	Available for Sale Debt Securities			
	September 30, 2020		December 31, 2019	
	Amortized Cost Basis	Fair Value	Amortized Cost Basis	Fair Value
Due in one year or less	$ 18,197	$ 18,307	$ 16,823	$ 16,851
Due after one year through five years	12,734	12,763	9,501	9,480
Due in five years	—	—	10,454	10,454
	$ 30,931	$ 31,070	$ 36,778	$ 36,785

NOTE 7. - INTANGIBLE ASSETS

Intangible assets are recorded at cost and consist primarily of (1) expenditures incurred with third-parties related to the processing of patent claims and trademarks with government authorities, as well as costs to acquire patent rights from third-parties, (2) license fees paid for third-party intellectual property, (3) costs to become a signatory under the tobacco MSA, and (4) license fees paid to acquire a predicate cigarette product. The amounts capitalized relate to intellectual property that the Company owns or to which it has exclusive rights. The Company's intellectual property capitalized costs are amortized using the straight-line method over the remaining statutory life of the granted patent assets in each of the Company's patent families, which have estimated expiration dates ranging from 2020 to 2036. Periodic maintenance or renewal fees are expensed as incurred. Annual minimum license fees are charged to expense. License fees paid for third-party intellectual property are amortized on a straight-line basis over the last to expire patents, which patent expiration dates are expected to range from 2020 through 2036. The Company believes costs associated with becoming a signatory to the MSA and acquiring a predicate cigarette product have an indefinite life and as such, no amortization is taken.

Total intangible assets at September 30, 2020 and December 31, 2019 consisted of the following:

	September 30, 2020	December 31, 2019
Intangible assets, net		
Patent and trademark costs	$ 5,614	$ 5,712
Less: accumulated amortization	(2,874)	(2,839)
Patent and trademark costs, net	2,740	2,873
License fees	3,826	3,777
Less: accumulated amortization	(887)	(708)
License fees, net	2,939	3,069
MSA signatory costs	2,202	2,202
License fee for predicate cigarette brand	350	350
	$ 8,231	$ 8,494

Amortization expense relating to the above intangible assets for the three and nine months ended September 30, 2020 amounted to $163 and $524 respectively ($233 and $671 for the three and nine months ended September 30, 2019 respectively). During the second quarter of 2020, the Company incurred an impairment related to patent intellectual property that would be expired before commercialization. Impairment expense for the three and nine months ended September 30, 2020 amounted to $0 and $146 (cost of approximately $448 less accumulated amortization of approximately $302), respectively. Impairment expense for the three and nine months ended September 30, 2019 amounted to $1,142 (cost of $2,092 less accumulated amortization of approximately $950).

NOTE 8. – NOTES PAYABLE

License Fees

On June 22, 2018, the Company entered into the Second Amendment to the License Agreement (the "Second Amendment") with North Carolina State University ("NCSU") that amended an original License Agreement between the Company and NCSU, dated December 8, 2015, and the First Amendment, dated February 14, 2018, to the original License Agreement. Under the terms of the Second Amendment, the Company was obligated to pay NCSU milestone payments totaling $1,200, which originally amounted to a present value of $1,175. As of June 30, 2020 the Company paid the final milestone payment of $300. The cost of the of acquired license amounted to $1,175 and is included in Intangible assets, net on the Company's Consolidated Balance Sheets, and is amortized on a straight-line basis over the last-to-expire patent, which is expected to be in 2036.

On October 22, 2018, the Company entered into a License Agreement with the University of Kentucky. Under the terms of the License Agreement, the Company is obligated to pay the University of Kentucky milestone payments totaling $1,200, of which $300 was payable upon execution, and $300 will be payable annually overthree years on the anniversary of the execution of the License Agreement. The Company has recorded the present value of the obligations under the License Agreement as a note payable that originally amounted to $1,151. The cost of the of acquired licenses amounted to $1,151 and is included in Intangible assets, net on the Company's Consolidated Balance Sheets and will be amortized on a straight-line basis over the last-to-expire patent, which is expected to be in 2033.

CARES Act Paycheck Protection Program Loan

On May 1, 2020, the Company received an U.S. Small Business Administration Loan ("SBA Loan") from Bank of America, N.A. related to the COVID-19 crisis in the amount of $1.2 million. On May 12, 2020, the Company repaid the SBA loan in full.

D&O Insurance

During the second quarter of 2020, the Company renewed its Director and Officer ("D&O") insurance for aone-year policy premium totaling $2,744. The Company paid $549 as a premium down payment and financed the remaining $2,195 of policy premiums over nine months at a 3.19% annual percentage rate. The financed amount is recorded within current notes payable on the Company's Consolidated Balance Sheets.

The table below outlines our notes payable balances as of September 30, 2020 and December 31, 2019:

	September 30, 2020	December 31, 2019
License Fees	$ 297	$ 581
D&O Insurance	1,226	—
Total current notes payable	$ 1,523	$ 581
Long term license fees	$ 292	$ 292

Accretion of non-cash interest expense amounted to $4 and $17 for the three and nine months ended September 30, 2020, respectively, and $7 and $28 for the three and nine months ended September 30, 2019, respectively.

NOTE 9. – SEVERANCE LIABILITY

During the second quarter of 2020, the Company recorded an accrual for severance benefits for$306 in accordance with FASB ASC 712 - "Compensation – Nonretirement Postemployment Benefits." Consistent with certain contractual obligations related to a resignation, the Company will provide cash payments and full reimbursement for health insurance premiums under the Consolidated Omnibus Budget Reconciliation Act ("COBRA"). The cash payments will be paid over a twelve-month period, on a bi-weekly basis, and the COBRA health insurance premiums will be reimbursed over twelve months.

During the third quarter of 2019, the Company recorded an accrual for severance benefits for$721 in accordance with FASB ASC 712 - "Compensation – Nonretirement Postemployment Benefits." The severance accrual relates to the resignation of the Company's former President and Chief Executive Officer (the "former CEO") effective July 26, 2019. Concurrent with the former CEO's resignation, the Company entered into a Consulting Agreement (the "Agreement") with the former CEO. The Agreement calls for the Company to pay a monthly consulting fee to the former CEO in the amount of $17 plus health insurance benefits for a period of forty-two months. The Company concluded that the terms of the Agreement met the severance criteria in ASC 712 and accordingly, a severance accrual was recorded.

The current and long-term accrued severance balance remaining as of September 30, 2020 was$423 and $294, respectively. The current and long-term accrued severance balance remaining as of December 31, 2019 was $359 and $446, respectively.

NOTE 10. - WARRANTS FOR COMMON STOCK

The Company issued warrants to purchase 11,293,211 shares of common stock which remain outstanding as of September 30, 2020. The warrants have an exercise price of $1.11 per share and an expiration date of November 25, 2024. The outstanding warrants do not include anti-dilution features and therefore are not considered derivative instruments and do not have an associated warrant liability.

The following table summarizes the Company's outstanding warrant activity since December 31, 2018:

	Number of Warrants in thousands
Warrants outstanding at December 31, 2018	11,293
Warrants exercised in Q4 2019	(11,293)
Warrants issued in Q4 2019	11,293
Warrants outstanding at September 30, 2020	11,293

There were no warrants issued or exercised during the first nine months of 2020.

NOTE 11. - COMMITMENTS AND CONTINGENCIES

License agreements and sponsored research – The Company has entered into various license, sponsored research, collaboration, and other agreements (the "Agreements") with various counter parties in connection with the Company's plant biotechnology business relating to tobacco and hemp/cannabis. The schedule below summarizes the Company's commitments, both financial and other, associated with each Agreement. Costs incurred under the Agreements are generally recorded as research and development expenses on the Company's Consolidated Statements of Operations and Comprehensive Loss.

				Future Commitments					
Commitment	Counter Party	Product Relationship	Commitment Type	2020	2021	2022	2023	2024 & After	Total
Research Agreement	KeyGene	Hemp / Cannabis	Contract fee	$ 230	$ 1,200	$ 1,200	$ 1,200	$ 300	$ 4,130 (1)
License Agreement	NCSU	Tobacco	Annual royalty fee	56	225	225	—	—	506 (2), (3)
License Agreement	NCSU	Tobacco	Minimum annual royalty	25	25	50	50	650	800 (3)
License Agreement	NCSU	Tobacco	Minimum annual royalty	50	50	50	50	550	750 (3)
Research Agreement	NCSU	Tobacco	Contract fee	45	121	—	—	—	166 (4)
Sublicense Agreement	Anandia Laboratories, Inc.	Hemp / Cannabis	Annual license fee	10	10	10	10	120	160 (5)
Growing Agreement	Various	Various	Contract fee	95	25	—	—	—	120 (6)
				$ 511	$ 1,656	$ 1,535	$ 1,310	$ 1,620	$ 6,632

(1) Exclusive agreement with the Company with respect to the *Cannabis Sativa L.* plant (the "Field"). The initial term of the agreement is five years with an option for an additional two years. The aggregate cost of the agreement over the initial term is $6,000. The Company will exclusively own all results and all intellectual property relating to the results of the collaboration with KeyGene (the "Results"). The Company will pay royalties in varying amounts to KeyGene relating to the Company's commercialization in the Field of certain Results. The Company has granted KeyGene a license to commercialize the Results outside of the Field and KeyGene will pay royalties in varying amounts to the Company relating to KeyGene's commercialization outside of the Field of the Results.

(2) The license agreement also requires a milestone payment of $150 upon FDA approval or clearance of a product that uses the NCSU licensed technology. The annual royalty fee is credited against running royalties on sales of licensed products.

(3) The Company is also responsible for reimbursing NSCU for actual third-party patent costs incurred, including capitalized patent costs and patent maintenance costs. These costs vary from year to year and the Company has certain rights to direct the activities that result in these costs.

(4) On September 11, 2020, the Company entered into a one-year Sponsored Project Agreement with NCSU for continued research of tobacco alkaloid formation.

(5) The Company is also responsible for the payment of certain costs, including, capitalized patent costs and patent maintenance costs, a running royalty on future net sales of products made from the sublicensed intellectual property, and a sharing of future sublicensing consideration received from sublicensing to third parties.

(6) Various R&D growing agreements for hemp / cannabis and tobacco.

Investment in Panacea - On December 3, 2019, the Company entered into an agreement to obtain a 15.8% ownership in Panacea. The Company paid Panacea $12,000 in cash and issued 1,297,017 shares of 22nd Century common stock with a fair value of $1,297. The agreement with Panacea also requires the Company to purchase 5,333,334 shares of puttable preferred stock at $1.875 when Panacea achieves a certain twelve-month sales target that is payable in $8,500 of cash and the remainder in common stock of the Company.

Modified Risk Tobacco Product Application ("MRTP Application") – In connection with the Company's MRTP Application for its Very Low Nicotine Content ("VLNC") cigarettes with the FDA, the Company has entered in various contracts with third-party service providers to fulfill various requirements of the MRTP Application. Such contracts include services for clinical trials, perception studies, legal guidance, product testing, and consulting expertise. During the three and nine months ended September 30, 2020, the Company incurred expenses relating to these contracts in the approximate amount of $4 and $158, respectively, and $69 and $1,593 for the three and nine months ended September 30, 2019, respectively. The Company will continue to incur consulting and legal expenses as the MRTP Application continues through the FDA review process. The Company cannot currently quantify the additional expenses that the Company will incur in the FDA review process because it will involve various factors that are within the discretion and control of the FDA.

Litigation - In accordance with applicable accounting guidance, the Company establishes an accrued liability for litigation and regulatory matters when those matters present loss contingencies that are both probable and estimable. In such cases, there may be an exposure to loss in excess of any amounts accrued. When a loss contingency is not both probable and estimable, the Company does not establish an accrued liability. As a litigation or regulatory matter develops, the Company, in conjunction with any outside counsel handling the matter, evaluates on an ongoing basis whether such matter presents a loss contingency that is probable and estimable. If, at the time of evaluation, the loss contingency related to a litigation or regulatory matter is not both probable and estimable, the matter will continue to be monitored for further developments that would make such loss contingency both probable and estimable. When a loss contingency related to a litigation or regulatory matter is deemed to be both probable and estimable, the Company will establish an accrued liability with respect to such loss contingency and record a corresponding amount of related expenses. The Company will then continue to monitor the matter for further developments that could affect the amount of any such accrued liability.

Class Action

On January 21, 2019, Matthew Jackson Bull, a resident of Denver, Colorado, filed a Complaint against the Company, the Company's then Chief Executive Officer, Henry Sicignano III, and the Company's then Chief Financial Officer, John T. Brodfuehrer, in the United States District Court for the Eastern District of New York entitled: Matthew Bull, Individually and on behalf of all others similarly situated, v. 22nd Century Group, Inc., Henry Sicignano III, and John T. Brodfuehrer, *Case No. 1:19-cv-00409*.

On January 29, 2019, Ian M. Fitch, a resident of Essex County Massachusetts, filed a Complaint against the Company, the Company's then Chief Executive Officer, Henry Sicignano III, and the Company's then Chief Financial Officer, John T. Brodfuehrer, in the United States District Court for the Eastern District of New York entitled: Ian Fitch, Individually and on behalf of all others similarly situated, v. 22nd Century Group, Inc., Henry Sicignano III, and John T. Brodfuehrer, *Case No. 2:19-cv-00553*.

On May 28, 2019, the plaintiff in the *Fitch* case voluntarily dismissed that action. On August 1, 2019, the Court in the *Bull* case issued an order designating Joseph Noto, Garden State Tire Corp, and Stephens Johnson as lead plaintiffs.

On September 16, 2019, pursuant to a joint motion by the parties, the Court in the *Bull* case transferred the class action to federal district court in the Western District of New York, where it remains pending as Case No. 1:19-cv-01285.

Plaintiffs in the *Bull* case filed an Amended Complaint on November 19, 2019 that alleges three counts: Count I sues the Company and Messrs. Sicignano and Brodfuehrer and alleges that the Company's quarterly and annual reports, SEC filings, press releases and other public statements and documents contained false statements in violation of Section 10(b) of the Securities Exchange Act and Rule 10b-5; Count II sues Messrs. Sicignano and Brodfuehrer pursuant to Section 10(b) of the Securities Exchange Act and Rule 10b5(a) and (c); and Count III sues Messrs. Sicignano and Brodfuehrer for the allegedly false statements pursuant to Section 20(a) of the Securities Exchange Act. The Amended Complaint seeks to certify a class, and unspecified compensatory and punitive damages, and attorney's fees and costs.

On January 29, 2020, the Company and Messrs. Sicignano and Brodfuehrer filed a Motion to Dismiss the Amended Complaint. On March 30, 2020, Plaintiffs filed a brief in opposition to the motion to dismiss. We then filed our final reply brief on April 29, 2020. On July 31, 2020, the Court heard oral arguments on our motion to dismiss and we are awaiting the Court's decision.

We believe that the claims are frivolous, meritless and that the Company and Messrs. Sicignano and Brodfuehrer have substantial legal and factual defenses to the claims. We intend to vigorously defend the Company and Messrs. Sicignano and Brodfuehrer against such claims.

Shareholder Derivative Cases

On February 6, 2019, Melvyn Klein, a resident of Nassau County New York, filed a shareholder derivative claim against the Company, the Company's then Chief Executive Officer, Henry Sicignano III, the Company's Chief Financial Officer, John T. Brodfuehrer, and each member of the Company's Board of Directors in the United States District Court for the Eastern District of New York entitled: Melvyn Klein, derivatively on behalf of 22nd Century Group v. Henry Sicignano, III, Richard M. Sanders, Joseph Alexander Dunn, Nora B. Sullivan, James W. Cornell, John T. Brodfuehrer and 22nd Century Group, Inc., *Case No. 1:19-cv-00748*. Mr. Klein brings this action derivatively alleging that (i) the director defendants supposedly breached their fiduciary duties for allegedly allowing the Company to make false statements; (ii) the director defendants supposedly wasted corporate assets to defend this lawsuit and the other related lawsuits; (iii) the defendants allegedly violated Section 10(b) of the Securities Exchange Act and Rule 10b-5 promulgated thereunder for allegedly approving or allowing false statements regarding the Company to be made; and (iv) the director defendants allegedly violated Section 14(a) of the Securities Exchange Act and Rule 14a-9 promulgated thereunder for allegedly approving or allowing false statements regarding the Company to be made in the Company's proxy statement.

On February 11, 2019, Stephen Mathew filed a shareholder derivative claim against the Company, the Company's then Chief Executive Officer, Henry Sicignano III, the Company's Chief Financial Officer, John T. Brodfuehrer, and each member of the Company's Board of Directors in the Supreme Court of the State of New York, County of Erie, entitled: Stephen Mathew, derivatively on behalf of 22nd Century Group, Inc. v. Henry Sicignano, III, John T. Brodfuehrer, Richard M. Sanders, Joseph Alexander Dunn, James W. Cornell, Nora B. Sullivan and 22nd Century Group, Inc., *Index No. 801786/2019*. Mr. Mathew brings this action derivatively generally alleging the same allegations as in the Klein case. The Complaint seeks declaratory relief, unspecified monetary damages, corrective corporate governance actions, and attorney's fees and costs. On August 15, 2019, the Court consolidated the *Mathew* and *Klein* actions pursuant to a stipulation by the parties (Western District of New York, Case No. 1-19-cv-0513). We believe that the claims are frivolous, meritless and that the Company and the individual defendants have substantial legal and factual defenses to the claims. We intend to vigorously defend the Company and the individual defendants against such claims.

On June 10, 2019, Judy Rowley filed a shareholder derivative claim against the Company, the Company's then Chief Executive Officer, Henry Sicignano III, the Company's Chief Financial Officer, John T. Brodfuehrer, and each member of the Company's Board of Directors in the Supreme Court of the State of New York, County of Erie, entitled: Judy Rowley, derivatively on behalf of 22nd Century Group, Inc. v. Henry Sicignano, III, Richard M. Sanders, Joseph Alexander Dunn, Nora B. Sullivan, James W. Cornell, John T. Brodfuehrer, and 22nd Century Group, Inc., *Index No. 807214/2019*. Ms. Rowley brings this action derivatively alleging that the director defendants supposedly breached their fiduciary duties by allegedly allowing the Company to make false statements. The Complaint seeks declaratory relief, unspecified monetary damages, corrective corporate governance actions, and attorney's fees and costs. We believe that the claims are frivolous, meritless and that the Company and the individual defendants have substantial legal and factual defenses to the claims. We intend to vigorously defend the Company and the individual defendants against such claims. On September 13, 2019, the Court ordered the litigation stayed pursuant to a joint stipulation by the parties.

On January 15, 2020, Kevin Broccuto filed a shareholder derivative claim against the Company, the Company's then Chief Executive Officer, Henry Sicignano III, the Company's Chief Financial Officer, John T. Brodfuehrer, and certain members of the Company's prior Board of Directors in the District Court of the State of Nevada, County of Clark, entitled: Kevin Broccuto, derivatively on behalf of 22nd Century Group, Inc. v. James W. Cornell, Richard M. Sanders, Nora B. Sullivan, Henry Sicignano, III, and John T. Brodfuehrer, Case *No. A-20-808599.* Mr. Broccuto brings this action derivatively alleging three counts: Count I alleges that the defendants breached their fiduciary duties; Count II alleges they committed corporate waste; and Count III that they were unjustly enriched, by allegedly allowing the Company to make false statements.

On February 11, 2020, Jerry Wayne filed a shareholder derivative claim against the Company, the Company's then Chief Executive Officer, Henry Sicignano III, the Company's Chief Financial Officer, John T. Brodfuehrer, and certain members of the

Company's prior Board of Directors in the District Court of the State of Nevada, County of Clark, entitled: Jerry Wayne, derivatively on behalf of 22nd Century Group, Inc. v. James W. Cornell, Richard M. Sanders, Nora B. Sullivan, Henry Sicignano, III, and John T. Brodfuehrer, Case No. A-20-808599. Mr. Wayne brings this action derivatively alleging generally the same allegations as the Brocutto case. The Complaint seeks unspecified monetary damages, corrective corporate governance actions, disgorgement of alleged profits and imposition of constructive trusts, and attorney's fees and costs. The Complaint also seeks to declare as unenforceable the Company's Bylaw requiring derivative lawsuits to be filed in Erie County, New York, where the Company is headquartered.

On March 25, 2020, the Court ordered the *Brocutto* and *Wayne* cases consolidated and stayed pursuant to a joint stipulation from the parties. We believe that the claims are frivolous, meritless and that the Company and the individual defendants have substantial legal and factual defenses to the claims. We intend to vigorously defend the Company and the individual defendants against such claims.

Shareholder Derivative Demand

On February 19, 2019, the Company received a demand letter from attorneys representing Van McClendon, a shareholder of the Company, in which Mr. McClendon demanded that the Company’s Board of Directors take action to pursue certain purported causes of action on behalf of the Company to remedy alleged breaches of fiduciary duties by each of the members of the Company’s Board of Directors, the Company’s Chief Executive Officer, Henry Sicignano III, and the Company’s Chief Financial Officer, John T. Brodfuehrer. On February 28, 2019, the Board appointed a Special Committee of independent directors and instructed the Committee to assess whether pursuing the claims detailed in the demand letter would be in the best interests of the Company. Subsequently, Mr. McClendon sold his shares and withdrew his demand. On May 7, 2019, after Mr. McClendon sold his shares, the Company received a similar demand letter from attorneys representing Jeremy Houck, a shareholder of the Company. Pursuant to the Board’s instruction, the Special Committee completed an investigation of the claims detailed in Mr. Houck’s demand letter. The Special Committee determined that pursuing such claims would not be in the best interest of the Company. On February 27, 2020, the Board of Directors adopted and approved the Special Committee’s determination.

NOTE 12 – EQUITY- BASED COMPENSATION

On April 12, 2014, the stockholders of the Company approved the 22nd Century Group, Inc. 2014 Omnibus Incentive Plan (the “OIP”) and the authorization of 5,000,000 shares to be reserved for issuance thereunder. On April 29, 2017, the stockholders approved an amendment to the OIP to increase the number of shares available for issuance by an additional 5,000,000 shares and on May 3, 2019, the stockholders approved an additional amendment to the OIP to increase the number of shares available for issuance by an additional 5,000,000 shares. The OIP allows for the granting of equity and cash incentive awards to eligible individuals over the life of the OIP, including the issuance of up to an aggregate of 15,000,000 shares of the Company’s common stock pursuant to awards under the OIP. The OIP has a term of ten years and is administered by the Compensation Committee of the Company’s Board of Directors to determine the various types of incentive awards that may be granted to recipients under the OIP and the number of shares of common stock to underlie each such award under the OIP. As of September 30, 2020, the Company had available 3,853,576 shares remaining for future awards under the OIP.

Restricted Stock (“RSU”). We grant restricted stock units to employees and non-employee directors which are valued based on the Company’s stock price on the award grant date. The following table summarizes the changes in unvested restricted stock from December 31, 2019 through September 30, 2020.

	Unvested RSUs	
	Number of Shares	**Weighted Average Grant-date Fair Value**
	in thousands	
Unvested at December 31, 2019	951	$ 2.15
Granted	2,797	$ 0.71
Vested	(499)	$ 1.85
Forfeited	(371)	$ 1.26
Unvested at September 30, 2020	2,878	$ 0.83

The fair value of RSUs that vested during the nine months ended September 30, 2020 was approximately $366 based on the stock price at the time of vesting.

Stock Options. Our outstanding stock options were valued using the Black-Scholes option-pricing model on the date of the award. A summary of all stock option activity since December 31, 2019 is as follows:

	Number of Options	**Weighted Average Exercise Price**	**Weighted Average Remaining Contractual Term**	**Aggregate Intrinsic Value**
	in thousands			
Outstanding at December 31, 2019	7,837	$ 1.49		
Forfeited	(101)	$ 2.76		
Expired	(478)	$ 0.74		
Outstanding September 30, 2020	7,259	$ 1.49	3.8 years	$ 14
Exercisable at September 30, 2020	6,447	$ 1.49	3.1 years	$ 7

The intrinsic value of a stock option is the amount by which the current market value or the market value upon exercise of the underlying stock exceeds the exercise price of the option.

Restricted Stock and Stock Option Compensation Expense. The Company recognized the following compensation costs, net of actual forfeitures, related to restricted stock and stock options:

	Three Months Ended September 30,		**Nine Months Ended September 30,**	
	2020	**2019**	**2020**	**2019**
Sales, general, and administrative	$ 278	$ 1,382	$ 1,051	$ 2,178
Research and Development	28	58	111	228
Total restricted stock and stock option compensation	$ 306	$ 1,440	$ 1,162	$ 2,406

As of September 30, 2020, unrecognized compensation expense amounted to $1,821 which is expected to be recognized over a weighted average period of approximately 1.1 years. In addition, there is approximately $637 of unrecognized stock option compensation expense that requires the achievement of certain milestones which have yet to be obtained.

NOTE 13. – REVENUE RECOGNITION

The Company recognizes revenue when it satisfies a performance obligation by transferring control of the product to a customer. The Company's customer contracts consist of obligations to manufacture the customer's branded filtered cigars and cigarettes. For certain contracts, the performance obligation is satisfied over time as the Company determines, due to contract restrictions, it does not have an alternative use of the product, and it has an enforceable right to payment as the product is manufactured. The Company recognizes revenue under those contracts at the unit price stated in the contract based on the units manufactured. Revenue from the sale of the Company's products is recognized net of cash discounts, sales returns and allowances. There was no allowance for discounts or returns and allowances at September 30, 2020 and December 31, 2019.

Contract Assets and Liabilities

Unbilled receivables (contract assets) represent revenues recognized for performance obligations that have been satisfied but have not been billed. These receivables are included as Accounts receivable, net on the Consolidated Balance Sheets. Customer payment terms vary depending on the terms of each customer contract, but payment is generally due prior to product shipment or within extended credit terms up to twenty-one (21) days after shipment. Deferred Revenue (contract liabilities) relate to down payments received from customers in advance of satisfying a performance obligation. This deferred revenue is included as Deferred income on the Consolidated Balance Sheets.

Total contract assets and contract liabilities are as follows:

	September 30, 2020	December 31, 2019
Unbilled receivables	$ 872	$ 406
Deferred Revenue	—	(5)
Net contract assets	$ 872	$ 401

Disaggregation of Revenue

The Company's net sales revenue is derived from customers located primarily in the United States of America and is disaggregated by the timing of revenue recognition—net sales transferred over time and net sales transferred at a point in time. All revenue is related to contract manufacturing.

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Net sales-over time	$ 4,339	$ 3,835	$ 12,769	$ 11,491
Net sales-point in time	2,971	2,627	8,034	7,080
Total Revenue	$ 7,310	$ 6,462	$ 20,803	$ 18,571

NOTE 14. – EARNINGS PER SHARE

The following table sets forth the computation of basic and diluted earnings (loss) per common share for the three and nine months ended September 30, 2020 and 2019, respectively. Outstanding warrants, options, and restricted stock units were excluded from the calculation of diluted EPS as the effect was antidilutive.

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
	(in thousands, except for per-share data)			
Net loss	$ (4,221)	$ (10,245)	$ (13,307)	$ (20,360)
Weighted average common shares outstanding - basic and diluted	138,857	125,420	138,774	124,912
Net loss per common share - basic and diluted	$ (0.03)	$ (0.08)	$ (0.10)	$ (0.16)
Anti-dilutive shares are as follows:				
Warrants	11,293	11,293	11,293	11,293
Options	7,259	8,287	7,259	8,287
Restricted stock units	2,878	1,051	2,878	1,051
	21,430	20,631	21,430	20,631

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

Forward Looking Statements

Except for historical information, all of the statements, expectations, and assumptions contained in this press release are forward-looking statements. Forward-looking statements typically contain terms such as "anticipate," "believe," "consider," "continue," "could," "estimate," "expect," "explore," "foresee," "goal," "guidance," "intend," "likely," "may," "plan," "potential," "predict," "preliminary," "probable," "project," "promising," "seek," "should," "will," "would," and similar expressions. Actual results might differ materially from those explicit or implicit in forward-looking statements. Important factors that could cause actual results to differ materially are set forth in "Risk Factors" in our Annual Report on Form 10-K filed on March 11, 2020 and in our subsequently filed Quarterly Reports on Form 10-Q. We undertake no obligation to publicly update or revise any forward-looking statement as a result of new information, future events, or otherwise, except as otherwise required by law. All information provided in this quarterly report is as of the date hereof, and we assume no obligation to and do not intend to update these forward-looking statements, except as required by law.

For purposes of this Management's Discussion and Analysis of Financial Condition and Results of Operations, references to the "Company," "we," "us" or "our" refer to the operations of 22nd Century Group, Inc. and its direct and indirect subsidiaries for the periods described herein.

Overview

22nd Century Group, Inc. is a leading biotechnology company developing disruptive, plant-based solutions for the life science, consumer product, and pharmaceutical markets. We are a focused on technology that allows us to alter the level of nicotine and other nicotinic alkaloids in tobacco plants and the levels of cannabinoids and terpenes in hemp/cannabis plants through genetic engineering and modern plant breeding techniques. Our mission in tobacco is to reduce the harm caused by smoking by introducing adult smokers to our proprietary, Very Low Nicotine Content ("VLNC") tobacco and cigarette products. Our mission in hemp/cannabis is to develop proprietary varieties of hemp with valuable cannabinoid and terpene profiles and other superior agronomic traits. We have a significant intellectual property portfolio of issued patents and patent applications relating to both tobacco and hemp/cannabis plants.

In tobacco, we have developed unique and proprietary bright and burley VLNC tobaccos that grow with at least 95% less nicotine than tobacco used in conventional cigarettes. In the year 2011, we developed our SPECTRUM® research cigarettes in collaboration with independent researchers and officials from the FDA, the National Institute on Drug Abuse ("NIDA"), which is part of the National Institutes of Health ("NIH"), the National Cancer Institute ("NCI"), and the Centers for Disease Control and Prevention ("CDC"). Since 2011, we have provided more than 28 million variable nicotine research cigarettes for use in numerous independent clinical studies with agencies of the United States federal government investing more than $125 million in such independent clinical studies. The results of these independent clinical studies have been published in peer-reviewed publications (including the *New England Journal of Medicine*, the *Journal of the American Medical Association*, and many others). Our VLNC tobaccos have been associated with reductions in smoking, nicotine exposure and nicotine dependence with little to no evidence of compensatory smoking and without serious adverse events. A list of completed and published clinical studies using cigarettes made with our VLNC tobaccos is shown on our website at https://www.xxiicentury.com/vln-clinical-studies/published-clinical-studies-on-very-low-nicotine-content-vlnc-cigarettes. A list of on-going clinical studies using our SPECTRUM® research cigarettes is shown on our website at https://www.xxiicentury.com/vln-clinical-studies/on-going-clinical-studies-on-very-low-nicotine-content-vlnc-cigarettes. We do not incorporate third party studies or the information on our website into this Quarterly Report on Form 10-Q.

In hemp, we are developing proprietary hemp varieties with increased levels of certain cannabinoids and other desirable agronomic traits with the goal of generating new and valuable intellectual property and plant lines. Our activities in the United States involve only work with legal hemp in full compliance with U.S. federal and state laws. The hemp plant and the marijuana plant are both part of the same *cannabis* genus of plant, except that hemp does not have more than 0.3% dry weight content of delta-9-tetrahydrocannabinol ("THC"). The federal Agricultural Improvement Act of 2018 (the "2018 Farm Bill") legalized hemp and cannabinoids extracted from hemp in the U.S. but such extracts remain subject to state laws and regulation by other U.S. federal agencies, such as the FDA , U.S. Drug Enforcement Administration ("DEA"), and the U.S. Department of Agriculture ("USDA"). The same plant, with a higher THC content is marijuana, which is legal under certain state laws, but which is currently not legal under U.S. federal law. The similarities between these plants can cause confusion. To reflect this difference in law, sometimes we refer to legal hemp and the legal hemp industry as hemp/cannabis to distinguish this as being separate and apart from marijuana/cannabis which is not legal under U.S. federal law. Our activities with legal hemp have sometimes been incorrectly perceived as us being involved in federally illegal marijuana/cannabis. This is not the case. In the United States, we work only with legal hemp in full compliance with federal and state laws.

Additional information about our business and operations is contained in our Annual Report on Form 10-K for the year ended December 31, 2019.

COVID-19 Pandemic

The COVID-19 pandemic has caused some disruption to our business and poses a risk to our future business, including delays by third party providers of goods or services to our business, interruptions to our sales, research and development, and administrative activities, and disruptions to our manufacturing operations. Similarly, state or federal authorities may also be affected in their capacity or capability to operate as normal and may impact the timeline of product authorizations which may disrupt our business plans.

Our Williamsville, NY corporate office and our R&D laboratory in Buffalo, NY remain open and are currently operating under strict safety protocols in accordance with New York State's reopening guidelines. These protocols include physical distancing, mandatory face coverings, disinfection of surfaces, and other health and safety measures. We continue to encourage remote work arrangements by our employees where job duties permit. Our laboratory in Buffalo is working to almost full capacity while some of our external research and development partners are operating on a modified or limited schedule during this period of the pandemic. The temporary closure of our laboratory and the interruption to our workflow related to COVID-19 has had a minimum impact on our research operations.

Our NASCO production facility in North Carolina remains open and, despite the pandemic, we have been able to fulfill sales orders in a timely manner. The safety and well-being of our employees remains a top priority and we to continue monitor and operate in line with local, state, and federal safety guidelines. An outbreak at our production facility, or disruption in our supply chain, could cause us to slow or temporarily cease our manufacturing operations.

Our executive leadership team and staff are monitoring this evolving situation and its impacts on our business. We will continue to monitor the local, state and federal guidance regarding our business practices.

Third Quarter 2020 Business Highlights and Key Events:

Key highlights for the third quarter 2020

- We remain focused on our primary mission of*reducing the harm caused by smoking* To this end, in recent weeks we have intensified our proactive efforts to secure a Modified Risk Tobacco Product (MRTP) authorization from the U.S. Food and Drug Administration (FDA) for VLN®. **With 95% less nicotine than leading brands - or any other cigarette in the U.S. - VLN® will make 22nd Century the first, and only company in the world to achieve a MRTP designation for a combustible cigarette.**
- We have plans in place to commercialize VLN® in the U.S. 90 days after receiving MRTP authorization. These plans include a rollout through large, well-recognized retail chains in the U.S. and a marketing campaign to introduce adult smokers to the world's lowest nicotine content cigarette.

- We were recently granted a new, highly valuable U.S. patent which provides us with precise genetic control over nicotine levels in virtually any variety of the tobacco plant. The breakthrough technology will enable us to rapidly introduce very low nicotine traits into all varieties of tobacco currently used in the production of cigarettes and other tobacco products.
- We have refocused our hemp/cannabis strategy to prioritize the upstream value chain segments of plant/seed biotechnology, breeding, cultivation, and purification of disruptive, proprietary plant lines over cannabidiol (CBD) and hemp-based consumer products in the U.S.
- Net sales revenue increased approximately 13.1% from the third quarter of 2019 to $7.3 million.
- Year-to-date, gross profit improved by $1.1 million year-over-year and continues to show improvement as a result of increased contract manufacturing operation (CMO) sales volume and pricing as well as targeted actions to improve production costs.
- Quarter-to-date, total operating expenses improved by $3.2 million and operating loss improved by $3.6 million over the prior-year quarter.
- Net loss improved by $6.0 million over the same quarter in the prior year.
- Our financial position remains strong with cash, cash equivalents, and short-term investment securities totaling approximately $26.8 million at the end of the third quarter 2020.

Business highlights and key events

- On September 17, 2020, we announced the appointment of Michael Koganov, Sc.D., Ph.D., to our Board of Directors. Dr. Koganov will serve as Chair of the Company's Scientific Advisory Board and as a member of the Board of Director's Finance Committee. Recognized as a leading expert in the development of plant-derived, natural products and solutions for pharmaceutical, consumer packaged goods, and life science companies, Dr. Koganov brings a valuable scientific perspective to our business and research and development strategies.
- On October 14, 2020, we announced that we were granted U.S. Patent No. 10,669,552 entitled "Up-regulation of auxin response factor NbTF7 to decrease nicotine in a plant." This crucial patent covers methods of manipulating plant metabolism and alkaloid levels by controlling transcription factor NbTF7, which regulates the nicotine alkaloid biosynthetic pathway. This breakthrough technology provides us with a rapid pathway to introduce very low nicotine traits into virtually any variety of tobacco, including bright, burley, oriental, and cigar tobacco varieties. This achievement further demonstrates that the FDA's Comprehensive Plan for Tobacco and Nicotine Regulation, to limit the nicotine content for all cigarettes sold in the U.S., is technically feasible and at the same time definitively disproves the "Big Tobacco" claim that such low nicotine levels cannot be achieved in all tobacco varieties.
- On October 19, 2020, we announced our participation in the Food and Drug Law Institute's Tobacco and Nicotine Products Regulation and Policy Conference. John Pritchard, our vice president of regulatory science, presented as a member of the conference's "Nicotine and Harm Reduction" panel on Thursday, October 22. During the conference, 22nd Century expressed strong support for the FDA's landmark 2017 Comprehensive Plan for Tobacco and Nicotine Regulation, in particular the FDA's plan to require all cigarettes sold in the U.S. to be made "minimally or non-addictive" by limiting their nicotine content to just 0.5 milligrams of nicotine per gram of tobacco, a level already achieved by our proprietary VLN® cigarettes. We gained significant exposure with the 300 participants attending the conference, including members of the FDA's Center for Tobacco Products (CTP), advocates of public health and regulation, and key members of the media. We continue to advocate for common-sense tobacco and nicotine regulation and urge public health officials to unite against the tragic toll of cigarette addiction.
- Since reporting second quarter earnings in August, we have finalized our strategic plans, set near-term milestones, and identified exciting medium and long-term opportunities. Our primary mission and highest, near-term priority is on reducing the harm caused by smoking. We will achieve our mission by bringing to market our proprietary, reduced nicotine content tobacco cigarettes – containing 95% less nicotine than conventional cigarettes – under the brand name VLN® upon the FDA's authorization of our MRTP application. We continue to maintain a dialogue with the FDA, and believe the Agency is in the final stages of the review process related to its application. In addition to its ongoing contact with the FDA, we are also working with various legal counsel, advisors, and government affairs specialists to highlight the public health importance of our MRTP application to encourage a near-term authorization of our application.

With more than 34 million smokers in the US and more than 1 billion worldwide, the FDA's authorization of the VLN® MRTP application will serve as a catalyst for our commercial sales. We believe that achieving just one-quarter of one percent (0.25%) market share of the U.S. tobacco market, could result in revenues that may over time, based on the disruptive nature of VLN®, drive our market capitalization more than 10 times higher. In addition, we believe the FDA's authorization of our modified risk tobacco products with modified exposure claims would open multiple licensing opportunities for our proprietary reduced nicotine content tobacco in the U.S. and globally.

- We will make VLN® available to adult smokers in the U.S. through its planned distribution in pharmacies, convenience stores, and other tobacco retail outlets within 90 days of receiving MRTP authorization from the FDA. We have received extremely positive feedback on its reduced nicotine content cigarettes from many potential partners in the independent, regional, and national retail trade, and we are in the process of finalizing our distribution plans and agreements. We are also in the final stages of completing our marketing plans for VLN® and currently anticipate a phased roll out in select geographies within 90 days of MRTP authorization. We plan to position VLN® in the premium pricing segment of the cigarette market and expect it to deliver corresponding margins. Our consumer market research indicates that 60% of adult smokers have an interest in using VLN®. Discussions with potential tobacco retailers have indicated strong support from trade channel partners.

- We have also made considerable progress in the development of our non-GMO (genetically modified organisms) technology and have successfully applied the next generation methodology of reducing nicotine levels in tobacco plants to several varieties of tobacco. The non-GMO technology has shown to consistently achieve reductions in nicotine levels by as much as 99% compared to conventional tobacco. We believe that non-GMO technology is key to commercializing global opportunities where non-GMO products are preferred by consumers or where GMO products are banned. We will begin to execute on commercial opportunities overseas once we secure MRTP authorization from the FDA, as the Agency is viewed as the gold standard in public health. We have already harvested non-GMO crops from field trials conducted earlier this year and we are already developing a non-GMO very low nicotine content cigarette prototype.

- The genesis of our hemp/cannabis research was established in 2014 through a worldwide license agreement with Anandia Laboratories. We maintain our exclusive sublicense in the U.S. and co-exclusive sublicense in the remainder of the world, excluding Canada, for 23 patent and patent applications relating to the hemp/cannabis plant. The licenses for these valuable patents survive Aurora Cannabis's acquisition of Anandia. We believe we can accelerate our research in hemp/cannabis through selective partnerships.

  Through our partnership with KeyGene, we have recently completed building our proprietary bioinformatics platform. Armed with this encyclopedia of information on the hemp/cannabis genome, we will begin monetizing the vast knowledge foundation and intellectual property we have developed over the past year. We believe that our collaborative efforts with KeyGene enables us to modify and improve the hemp/cannabis plant using the fastest and most cost-effective methods available. We continue to target and develop hemp/cannabis lines with select agronomic traits including lines with stable, ultra-high tetrahydrocannabinol (THC) levels, lines with higher levels of rare cannabinoids, and lines with ultra-low terpene levels.

- We have refocused our hemp/cannabis strategy to target the upstream segments of the cannabinoid value chain, in particular, in the areas of plant biotechnology research, gene modification and engineering, modern plant breeding and development, and extraction. We intend to build upon our core strengths in the plant science and ingredient value chain and seek to form operational partnerships that will enable us to offer comprehensive commercial breeding, cultivation, and extraction purification services utilizing proprietary hemp/cannabis plants in development. With the progress that we have made over the past year in our partnership with Panacea, we will focus on and ensure the accelerated delivery of valuable, commercial plant lines and technology, and intellectual property for the life science, consumer product, and pharmaceutical markets over finished consumer goods.

- We have also identified a third plant-based franchise that has similarities in its genome to the hemp/cannabis plant. We plan to turn attention to this franchise after execution of our tobacco and hemp/cannabis strategies. We are in the process of securing valuable intellectual property and pursuing strategic partnerships to support the development of this franchise and will provide additional information over the coming months as the competitive situation allows.

Results of Operations

Amounts in thousands, except for share and per-share data

Comparison of Three and Nine Months Ended September 30, 2020 and 2019

Revenue - Sale of products, net

	Quarter-to-Date		Year-to-Date	
	September 30 2020	September 30 2019	September 30 2020	September 30 2019
Sale of products, net	$ 7,310	$ 6,462	$ 20,803	$ 18,571
Dollar Change from Prior Year	848		2,232	

The increase in sales revenue for the three and nine months ended September 30, 2020, compared the three months ended September 30, 2019, was primarily the result of increases in the sales of contract manufactured filtered cigars and cigarettes. Filtered cigar sales increased by $215 and $1,300 in the quarter-to-date (QTD) and year-to-date (YTD) periods, respectively, while cigarette sales increased $633 and $929 in the QTD and YTD periods, respectively. The YTD filtered cigar sales increase was primarily driven by volume increases compared to the prior period, while the YTD cigarette sales increases was driven by both volume and price increases compared to the prior period.

Cost of goods sold - Products / Gross profit (loss)

	Quarter-to-Date		Year-to-Date	
	September 30 2020	September 30 2019	September 30 2020	September 30 2019
Cost of goods sold	$ 6,948	$ 6,483	$ 19,953	$ 18,781
Percent of Product Sales	95.0 %	100.3 %	95.9 %	101.1 %
Dollar Change from Prior Year	465		1,172	

	Quarter-to-Date		Year-to-Date	
	September 30 2020	September 30 2019	September 30 2020	September 30 2019
Gross profit (loss)	$ 362	$ (21)	$ 850	$ (210)
Percent of Product Sales	5.0 %	(0.3)%	4.1 %	(1.1)%
Dollar Change from Prior Year	383		1,060	

For the three and nine months ended September 30, 2020, the change to a gross profit from a gross loss, as compared to the prior year respective periods, was driven primarily by increased cigarette sales volume, increased cigarette pricing, and lower labor and overhead costs per unit driven by factory efficiencies implemented during 2020.

Research and development expense

	Quarter-to-Date		Year-to-Date	
	September 30 2020	September 30 2019	September 30 2020	September 30 2019
Research and Development	$ 906	$ 1,924	$ 2,676	$ 4,838
Percent of Product Sales	12.4 %	29.8 %	12.9 %	26.1 %
Dollar Change from Prior Year	(1,018)		(2,162)	

Lower R&D expense for three and nine months ended September 30, 2020, as compared to the prior year respective periods, was primarily driven by a decrease in our R&D personnel expense and a decrease in tobacco leaf inventory impairment.

Personnel expense decreased by $195 and $813 in the QTD and YTD periods, respectively, due to more focused R&D headcount to accomplish our strategies, while tobacco leaf inventory impairment decreased by $824 in the QTD and YTD periods, respectively. Additionally, license and contract costs decreased $448 and increased $100 for the YTD and QTD periods, respectively. The lower YTD license and contract spending is primarily a result of 2019 milestone payments for certain research agreements which were not due in the current year. We continue to prioritize our R&D activities to achieve our strategic and investment priorities.

Research and development expense - MRTP

	Quarter-to-Date		Year-to-Date	
	September 30 2020	September 30 2019	September 30 2020	September 30 2019
Research and Development - MRTP	$ 4	$ 69	$ 158	$ 1,593
Percent of Product Sales	0.1 %	1.1 %	0.8 %	8.6 %
Dollar Change from Prior Year	(65)		(1,435)	

MRTP expenses for both the QTD and YTD periods ended September 30, 2020 declined significantly, as we submitted our MRTP application to the FDA during 2019. MRTP-related expenses for 2020 are primarily related to our February 14, 2020 Tobacco Products Scientific Advisory Committee (TPSAC) hearing.

Sales, general and administrative expense

	Quarter-to-Date		Year-to-Date	
	September 30 2020	September 30 2019	September 30 2020	September 30 2019
Sales, general and administrative	$ 3,169	$ 4,059	$ 9,809	$ 9,119
Percent of Product Sales	43.4 %	62.8 %	47.2 %	49.1 %
Dollar Change from Prior Year	(890)		690	

The decrease in sales, general and administrative ("SG&A") expense during the three months ended September 30, 2020, as compared to the prior year respective period, was driven by lower one-time severance expenses of $721 and decreased equity compensation expense of $1,103—both driven by management changes in the third quarter of 2019. This decrease was partially offset by a $546 increase in insurance expenses, a $167 increase in consulting and professional services expenses, and a $151 increase in marketing expenses.

The increase in SG&A expense during the nine months ended September 30, 2020, as compared to the prior year respective period, was driven by a $1,015 increase in insurance expenses, a $966 increase in consulting and professional services expenses, a $225 increase in personnel expense, a $130 increase in accounting fees, and a $115 increase in marketing expenses. We have deployed this incremental SG&A spending to support our corporate management capabilities, and to evaluate and prepare for future opportunities. These increases were partially offset by lower equity compensation expense of $1,127, lower one-time severance expenses of $415, a decrease in investor relations expenses of $140, a decrease in travel and entertainment expenses of $137, and a decrease in legal fees of $30.

Impairment expense

	Quarter-to-Date		Year-to-Date	
	September 30 2020	September 30 2019	September 30 2020	September 30 2019
Impairment of intangible assets	$ —	$ 1,142	$ 146	$ 1,142
Percent of Product Sales	— %	17.7 %	0.7 %	6.2 %
Dollar Change from Prior Year	(1,142)		(996)	

During the nine months ended September 30, 2020 and 2019, management conducted a review of intellectual property assets, and determined that impairment was required for certain patent and trademark costs. As such, we recorded a one-time impairment charge of approximately $146 and $1,142 for the current year and prior year, respectively.

Depreciation expense

	Quarter-to-Date		Year-to-Date	
	September 30 2020	September 30 2019	September 30 2020	September 30 2019
Depreciation	$ 160	$ 158	$ 473	$ 440
Percent of Product Sales	2.2 %	2.4 %	2.3 %	2.4 %
Dollar Change from Prior Year	2		33	

The increase in depreciation expense was primarily due to additional machinery and equipment acquisitions during 2019 to further develop our production facility in North Carolina.

Amortization expense

	Quarter-to-Date		Year-to-Date	
	September 30 2020	September 30 2019	September 30 2020	September 30 2019
Amortization	$ 163	$ 233	$ 524	$ 671
Percent of Product Sales	2.2 %	3.6 %	2.5 %	3.6 %
Dollar Change from Prior Year	(70)		(147)	

Amortization expense relates to amortization taken on capitalized patent costs and license fees. The decrease was primarily due to amortization expense on a lower patent base which resulted from one-time impairment charges as described in the "Impairment expense" section above.

Unrealized gain (loss) on investment

	Quarter-to-Date		Year-to-Date	
	September 30 2020	September 30 2019	September 30 2020	September 30 2019
Unrealized gain (loss) on investments	$ (429)	$ (2,959)	$ (562)	$ (1,410)
Percent of Product Sales	(5.9)%	(45.8)%	(2.7)%	(7.6)%
Dollar Change from Prior Year	2,530		848	

The warrants to purchase 81,164 shares of Aurora Cannabis, Inc ("Aurora") common stock are considered an equity security and are recorded at fair value. We recorded the fair value of the stock warrants of $111 at September 30, 2020, using the Black-Scholes pricing model, and recorded an unrealized loss on the warrants in the amount of $429 for the three months ended September 30, 2020 , and an unrealized loss of $562 for the nine months ended September 30, 2020.

Gain on the sale of machinery and equipment

	Quarter-to-Date		Year-to-Date	
	September 30 2020	September 30 2019	September 30 2020	September 30 2019
Gain on the sale of machinery and equipment	$ 1	$ —	$ 1	$ 87
Percent of Product Sales	0.0 %	— %	— %	0.5 %
Dollar Change from Prior Year	1		(86)	

We recognized a small gain on equipment sold during the three and nine months ended September 30, 2020. During the nine months ended September 30, 2019, we sold a piece of machinery and equipment no longer required in our factory operations in North Carolina and recorded a gain on the sale in the amount of $87.

Interest income, net

	Quarter-to-Date		Year-to-Date	
	September 30 2020	September 30 2019	September 30 2020	September 30 2019
Interest Income, net	$ 270	$ 242	$ 1,344	$ 757
Percent of Product Sales	3.7 %	3.7 %	6.5 %	4.1 %
Dollar Change from Prior Year	28		587	

Interest income, net (interest income less investment fees) for the nine months ended September 30, 2020 is comprised of cash interest on our convertible note receivable and short-term investment securities, and non-cash interest accretion of $265 on our convertible note, preferred stock investment in Panacea, and short-term investment securities purchased at a discount or premium. During the nine months ended September 30, 2019, interest income, net was composed exclusively of earnings on our short-term investments.

Interest expense

	Quarter-to-Date		Year-to-Date	
	September 30 2020	September 30 2019	September 30 2020	September 30 2019
Interest Expense	$ (23)	$ (12)	$ (54)	$ (36)
Percent of Product Sales	(0.3)%	(0.2)%	(0.3)%	(0.2)%
Dollar Change from Prior Year	(11)		(18)	

Interest expense for 2020 was in line with the expense for the same QTD and YTD periods during the prior year. Interest expense for the nine months ended September 30, 2020 and 2019 related to interest accretion on notes payable to NCSU and the University of Kentucky, and interest accretion on accrued severance. The YTD period for 2020 also included cash interest expense of $19 on notes payable for D&O insurance.

Net loss

	Quarter-to-Date		Year-to-Date	
	September 30 2020	September 30 2019	September 30 2020	September 30 2019
Net Loss	$ (4,221)	$ (10,245)	$ (13,307)	$ (20,360)
Percent of Product Sales	(57.7)%	(158.5)%	(64.0)%	(109.6)%
Dollar Change from Prior Year	6,024		7,053	

The decrease in net loss for the three months ended September 30, 2020, as compared to the same period during the prior year, was primarily the result of an unrealized loss of $2,959 on our Aurora warrants during the three months ended September 30, 2019 compared to an unrealized loss of $429 for the three months ended September 30, 2020, along with an increase in gross profit, lower total operating expenses, and a 2019 intangible asset impairment of $1,142 which did not repeat in 2020.

The year-to-date reduction in the net loss was primarily the result of improved gross profit, lower total operating expenses, one-time 2019 litigation settlement costs that did not repeat in 2020, lower unrealized loss on our Aurora warrants, and increased interest income primarily related to the Panacea investment. These impacts were somewhat offset by a 2020 impairment charge on our Panacea stock warrant in the amount of $1,062 (see Note 5 to the financial statements).

Other Comprehensive Income (Loss)

	Quarter-to-Date		Year-to-Date	
	September 30 2020	September 30 2019	September 30 2020	September 30 2019
Other Comprehensive Income (Loss)	$ 87	$ (87)	$ 132	$ 93
Percent of Product Sales	1.2 %	(1.4)%	0.6 %	0.5 %
Dollar Change from Prior Year	174		39	

We maintain an account for short-term investment securities that are classified as available-for-sale securities and consist of money market funds and corporate bonds with maturities greater than three months at the time of acquisition. Unrealized gains and losses on short-term investment securities (the adjustment to fair value) are recorded as other comprehensive income or loss. We recorded an unrealized gain on short-term investment securities in the amount of $87 resulting in other comprehensive income of $87 for the three months ended September 30, 2020. For the three months ended September 30, 2019, we recorded an unrealized gain on short-term investment securities of $3 and recorded a reclassification of gains to net loss in the amount of $90, resulting in other comprehensive loss of $87.

For the nine months ended September 30, 2020, we recorded an unrealized gain on short-term investment securities of $132, resulting in other comprehensive income of $132. For the nine months ended September 30, 2019, we recorded an unrealized gain on short-term investment securities of $239 and a reclassification of gains to net loss of $146, resulting in other comprehensive income of $93.

Liquidity and Capital Resources

	Quarter-to-Date		Year-to-Date	
	September 30 2020	September 30 2019	September 30 2020	September 30 2019
Net cash used in operating activities	$ (1,151)	$ (2,953)	$ (12,624)	$ (11,698)
Net cash provided by investing activities	2,576	2,696	12,755	12,110
Net cash provided by (used) in financing activities	(727)	—	926	(400)
Net increase (decrease) in cash and cash equivalents	698	(257)	1,057	12
Cash and cash equivalents - beginning of period	844	874	485	605
Cash and cash equivalents - end of period	$ 1,542	$ 617	$ 1,542	$ 617
Short-term investment securities	$ 25,276	$ 43,101	$ 25,276	$ 43,101

Working Capital

As of September 30, 2020, we had working capital of approximately $26,545 compared to working capital of approximately $36,962 at December 31, 2019, a decrease of $10,417. This decrease in working capital was primarily due to a decrease in net current assets of approximately $9,654 as well as an increase in net current liabilities of approximately $763. Cash, cash equivalents and short-term investment securities decreased by approximately $12,144 and the remaining net current assets increased by approximately $2,490. We used approximately $12,624 of cash in operating activities during the nine months ended September 30, 2020. Our cash balance as of September 30, 2020 (inclusive of cash and cash equivalents and short-term investments) decreased $2,130 and $12,144 from June 30, 2020 and December 31, 2019, respectively. This equates to an average monthly cash usage of $710 and $1,349 for the three and nine months ended September 30, 2020, respectively.

We must successfully execute our business strategy to achieve profitability and positive cash flows from operations. We believe that we have sufficient liquidity to fund our regular business activities for the foreseeable future.

We have an effective S-3 shelf registration statement on file with the U.S. Securities and Exchange Commission (SEC). The shelf registration statement replaced our previously expired shelf registration statement and provides us flexibility and optionality to raise capital in order to make crucial investments should compelling opportunities arise in the future, such as investments in technology or brand development.

Net cash used in operating activities

The increase of cash used in operations in the amount of $926 was due to an increase in cash used for working capital components related to operations in the amount of $3,335 which was partially offset by a decrease in the cash portion of the net loss in the amount of $2,409 for the nine months ended September 30, 2020 as compared to the nine months ended September 30, 2019. The increase in cash used for working capital components was primarily due to an increase in pre-paid D&O insurance which is described further in Note 8 to the financial statements.

Net cash provided by investing activities

The increase in cash provided by investing activities, in the amount of $645, was primarily the result of an increase in net cash provided from short-term investments account in the amount of $243 and a decrease in cash flows related to acquisition of Patents and trademarks and Machinery and equipment of in the net amount of $568. These increased cash inflows were partially offset by a decrease in proceeds from the sale of Machinery and equipment in the amount of $166 during the nine months ended September 30, 2020 as compared to the nine months ended September 30, 2019.

Net cash provided by (used in) financing activities

During the nine months ended September 30, 2020, cash provided by financing activities was $926 resulting from a note payable issuance of $2,195 which was offset by principal payments on our notes payable of $1,269. During the nine months ended September 30, 2019, cash used in financing activities was $400 resulting from a principal payment on our note payables.

Critical Accounting Policies and Estimates

There have been no material changes to the information set forth in our Annual Report on Form 10-K for the year ended December 31, 2019.

Inflation

Inflation did not have a material effect on our operating results for the nine months ended September 30, 2020 and 2019, respectively.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements as defined by Item 303(a)(4) of Regulation S-K.

Item 4. Controls and Procedures

(a) Evaluation of Disclosure Controls and Procedures:

The Company maintains disclosure controls and procedures that are designed to ensure that information required to be disclosed in its Securities Exchange Act of 1934 (“Exchange Act”) reports are recorded, processed, summarized and reported within the time periods specified in the SEC’s rules and forms, and that such information is accumulated and communicated to the Company’s management, including the Company’s principal executive officer and chief financial officer, as appropriate, to allow timely decisions regarding required disclosure. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

Our principal executive officer and chief financial officer, after evaluating the effectiveness of the Company's "disclosure controls and procedures" (as defined in the Exchange Act Rules 13a-15(e) or 15d-15(e)) as of the end of the period covered by this quarterly report, have concluded that our disclosure controls and procedures were effective as of the end of the period covered by this Form 10-Q to ensure information required to be disclosed is recorded, processed, summarized and reported within the time period specified by SEC rules, based on their evaluation of these controls and procedures as required by paragraph (b) of Exchange Act Rules 13a-15 or 15d-15.

(b) Changes in Internal Control over Financial Reporting:

There were no changes in the Company's internal controls over financial reporting during the third quarter of 2020 that have materially affected, or are reasonably likely to materially affect, the Company's internal controls over financial reporting.

Part II. OTHER INFORMATION

Item 1. Legal Proceedings

See Note 11 - Commitments and Contingencies – Litigation - to our consolidated financial statements included in this Quarterly Report for information concerning our on-going litigation. In addition to the lawsuits described in Note 11, from time to time we may be involved in claims arising in the ordinary course of business. To our knowledge other than the cases described in Note 11 to our consolidated financial statements, no material legal proceedings, governmental actions, investigations or claims are currently pending against us or involve us that, in the opinion of our management, could reasonably be expected to have a material adverse effect on our business and financial condition.

Item 1A. Risk Factors

There have been no material changes from the risk factors disclosed in Item 1A of Part I of our Annual Report on Form 10-K for the year ended December 31, 2019, as filed with the SEC on March 11, 2020, and Item 1A of Part II of our Quarterly Report on Form 10-Q for the three months ended March 31, 2020, as filed with the SEC on May 7, 2020.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds.

None

Item 3. Default Upon Senior Securities.

None

Item 4. Mine Safety Disclosures

None

Item 5. Other Information

None

Item 6. Exhibits

Exhibit 31.1	Section 302 Certification - Chief Executive Officer
Exhibit 31.2	Section 302 Certification - Chief Financial Officer
Exhibit 32.1	Certification of Principal Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350 as adopted pursuant to section 906 of the Sarbanes-Oxley Act of 2002.
101.INS	XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document
Exhibit 104	Cover Page Interactive Data File - The cover page interactive data file does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized:

	22nd CENTURY GROUP, INC.
Date: November 5, 2020	/s/ James A. Mish James A. Mish Chief Executive Officer (Principal Executive Officer)
Date: November 5, 2020	/s/ John Franzino John Franzino Chief Financial Officer (Principal Accounting and Financial Officer)

Exhibit 31.1

CERTIFICATIONS

I, James A. Mish, Chief Executive Officer of 22nd CENTURY GROUP, INC., certify that:

1. I have reviewed this quarterly report on Form 10-Q of 22nd CENTURY GROUP, INC.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules13a-15(f) and 15d-15(f)) for the registrant and have:

   a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting.

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing equivalent functions):

   a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 5, 2020

/s/ James A. Mish
James A. Mish
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATIONS

I, John Franzino, Chief Financial Officer of 22nd CENTURY GROUP, INC., certify that:

1. I have reviewed this quarterly report on Form 10-Q of 22nd CENTURY GROUP, INC.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules13a-15(f) and 15d-15 (f)) for the registrant and have:

   a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting.

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing equivalent functions):

   a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 5, 2020

/s/ John Franzino
John Franzino
Chief Financial Officer
(Principal Accounting and Financial Officer)

Exhibit 32.1

Written Statement of the Principal Executive Officer and Chief Financial Officer Pursuant to 18 U.S.C. §1350

Solely for the purposes of complying with 18 U.S.C. §1350, I, the undersigned Chief Executive Officer of 22nd CENTURY GROUP, INC. (the “Company”), and I, the undersigned Chief Financial Officer of the Company, hereby certify, to the best of my knowledge, that the quarterly report on Form 10-Q of the Company for the quarter ended September 30, 2020 (the “Report”) fully complies with the requirements of Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934 and that the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

This certification is being furnished solely to accompany this Report pursuant to 18 U.S.C. 1350, and is not being filed for purposes of Section 18 of the Securities Exchange Act of 1934 and is not to be incorporated by reference into any filing of the registrant, whether made before or after the date hereof, regardless of any general incorporation language in such filing.

Date: November 5, 2020

/s/ James A. Mish
James A. Mish
Chief Executive Officer

Date: November 5, 2020

/s/ John Franzino
John Franzino
Chief Financial Officer