



Healthcare Industry Update

Tuesday May 15th, 2018



THINKING BIG

As forecast in the January 30th, 2018 edition of the Origin Rx (“2018 should be a big year for drug deals!”), healthcare M&A is picking up steam with some significant transactions announced over the last couple of weeks alone. Aurora Cannabis is buying MedReleaf in a \$3.2B share deal, Takeda has come to terms with Shire in a \$62B acquisition, and Eli Lilly announced two acquisitions – ARMO BioSciences to boost their immuno-oncology pipeline in a \$1.6B all-cash deal, and Montreal-based AurKa Pharma for \$110M upfront and up to \$465M in milestone payments. Interestingly, AurKa’s lead cancer fighting kinase, now in Phase 1 testing in a range of solid tumour indications, was originally discovered at Lilly, prior to being financed by TVM Capital in a special-purpose vehicle to generate proof of concept and de-risk the project.

It’s hard not to talk about M&A with so much of it going on! But we’ll come back to that after we look at drug sales forecasts, because 2018 is predicted to set a new record for blockbuster drug launches. Clarivate Analytics says a dozen drugs launched or being launched this year are set to achieve blockbuster status – sales of \$1B within five years. The flywheel of drug development is turning faster, with enabling strategies such as patient selection, available biomarkers, partnerships between biotechs and large pharmas as well as certain accelerated approval processes at the FDA. The table below lists their blockbuster picks:

Drug	Disease	Company	Estimated Sales Potential 2022
Hemlibra	Hemophilia A with factor VIII inhibitors	Roche/Chugai	\$4.0B
Biktarvy	HIV infection	Gilead	\$3.7B
Ozempic	Type 2 diabetes	Novo Nordisk	\$3.5B
Erleada	Non-metastatic CRPC	Johnson & Johnson	\$2.0B
Shingrix	Shingles	GlaxoSmithKline	\$1.4B
Patisiran	Hereditary TTR amyloidosis	Alnylam/Genzyme	\$1.2B
Epidiolex	Dravet syndrome and Lennox-Gastaut syndrome	GW Pharma	\$1.2B
Aimovig	Migraine	Amgen/Novartis	\$1.2B
Lanadelumab	Hereditary angioedema	Shire	\$1.2B
Elagolix	Endometriosis	AbbVie	\$1.2B
Steglatro	Type 2 diabetes	Pfizer/Merck	\$1.1B
Sublocade	Opioid dependence	Indivior	\$1.1B

The class of 2018 blockbusters stands to be a distinguished one, with some exciting firsts on this list. If approved, **Epidiolex** will be the first approved cannabinoid-based medication in the US, a game-changer for other cannabis-derived therapeutics. **Patisiran** will be the first FDA-approved RNA interference therapeutic, granted Breakthrough Therapy Designation by the FDA with the potential to be a best-in-class treatment. **Hemlibra** is another treatment granted Breakthrough Therapy Designation for treatment of Hemophilia A. **Aimovig** is poised to be the first-to-market of a new class of calcitonin gene-related peptide receptor inhibitors to treat migraine. Talking about blockbusters, **Cannabis** is forecast to be a global market in excess of \$30B by 2021.

These forecasts help to shine a light on M&A and its drivers. Shire looks like a good target for Takeda given their shared focus in GI, CNS and oncology together with added strength in rare diseases and plasma-based therapies. Shire’s pipeline, including blockbuster candidate Lanadelumab, might be just what the doctor ordered for Takeda, particularly in the face of Velcade’s declining sales.

We expect healthcare M&A to continue, fuelled by macro factors such as US tax reform, global pricing pressure on drugs and increasing costs of capital. Companies are driven to get bigger, for improved economies of scale and competitive positioning. Growth by acquisition also enables acquirors to manage their risk, buying products which others have substantially de-risked. But acquisitions only payoff if valuations are smart, new debt levels are reasonable and integration works. Look for more corporate consolidation, including one or two companies on the 2018 blockbuster list.

CATHY STEINER, PRINCIPAL



BIGGEST MOVERS

Recent News¹

Markets have inched forward in the first half of May, with the TSX increasing 3.0% and the Nasdaq increasing 4.5%. It's been a mixed bag in healthcare subsectors, which follow in this report. A selection of the largest share price movers in the healthcare space during the recent period is included below:

- **Arrowhead Pharmaceuticals Inc.** (NasdaqGS:ARWR, +53%): Arrowhead is a biopharmaceutical company based in California, that develops medicines that treat intractable diseases by silencing the genes that cause them. The company currently has eight products in its pipeline, in various stages of development. Strong share performance was attributable to the recent announcement that it will present preclinical data on ARO-ANG3 and ARO-APOC3, its two candidates targeting cardiometabolic diseases, and ARO-ENaC, its first candidate to leverage the Targeted RNAi Molecule (TRIMTM) platform to address diseases in the lung.
- **Opko Health Inc.** (NasdaqGS:OPK, +44%): Opko Health is a multinational pharmaceutical & diagnostics company. Strong recent share performance was driven by announcement of strong operating performance caused in part by commercial launches Rayaldee, its chronic kidney drug, and prostate cancer test 4K score were finally starting to gain momentum
- **Coherus Biosciences, Inc.** (NasdaqGM:CHRS, +35%): Coherus Biosciences is a late-stage biologics platform company focused on the global biosimilar market. Biosimilars are intended for use in place of existing, branded biologics to treat a range of chronic and often life-threatening diseases, with the potential to reduce costs and expand patient access. Strong recent share performance was driven by the re-submission of its biologics license application, and an anticipated European approval of its pegfilgrastim biosimilar candidate, CHS-1701
- **Regenxbio Inc.** (NasdaqGS:RGNX, +27%): Regenxbio is a clinical-stage biotechnology company. Regenxbio provides gene therapy product candidates to deliver genes to cells to address genetic defects. Recent share performance has been driven by strong operating performance and the recent announcement that the FDA has granted fast track designation for its Mucopolysaccharidosis Type I drug, RGX-121
- **Quorum Health Corporation** (NYSE:QHC, -26%): Quorum Health is an operator and manager of general acute care hospitals and outpatient services in the United States. The Company operates in two segments: Hospital operations and hospital management advisory and consulting services. Its recent declining share price was driven by announcement of its weak first quarter earnings. Decline in the net operating revenues for the quarter was primarily attributable to a decrease from the ten hospitals sold or closed since the spin-off from Community Health Systems
- **Esperion Therapeutics Inc.** (NasdaqGM:ESPR, -43%): Esperion is a pharmaceutical company that specializes in developing and commercializing non-statin, convenient, complementary, consistent, once-daily, oral therapies for the treatment of patients with elevated low-density lipoprotein cholesterol (LDL-C). Poor recent share performance was driven by the announcement of negative operating performance, and a class action lawsuit related to allegations of fatalities during clinical trials

Note 1: For the period April 30th to May 14th, 2018

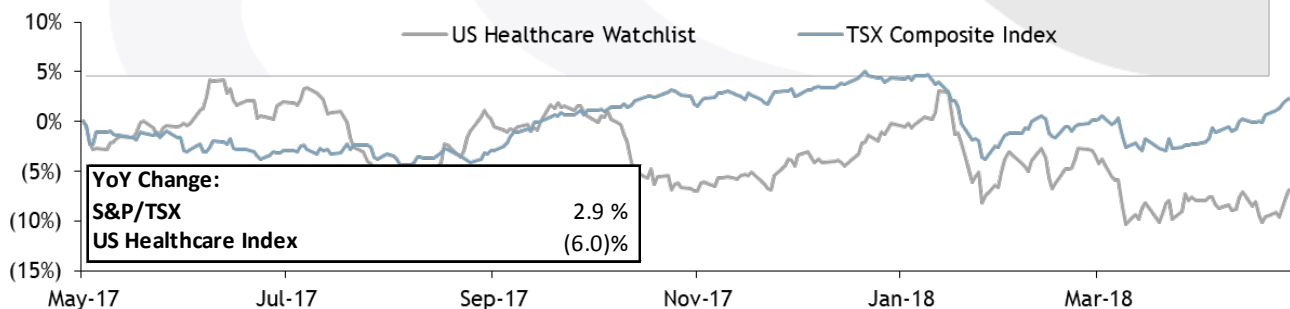


US HEALTHCARE WATCHLIST

News Scan¹

- The US Healthcare Watchlist index lost approximately 6.0% over the last twelve months, while the TSX Composite Index gained 2.9% over the same period. Some events making news this month:
- On May 14th, **Eli Lilly and Company**, a U.S. based global pharmaceutical company, announced the acquisition of cancer drug developer **AurKa Pharma** in a deal potentially worth up to US\$575 million. AurKa will receive US\$110 million cash up-front and can earn up to US\$465 million more if it achieves undisclosed regulatory and sales milestones. This represents the second transaction in less than a week for Eli Lilly as it tries to broaden its portfolio of cancer drugs.
- On May 10th, **Eli Lilly and Company** announced it agreed to acquire **ARMO Biosciences Inc.** for around US\$1.6 billion in an all cash transaction. Eli Lilly bought ARMO for \$50 per share, which implies a premium of 68% to ARMO's prior day's close. Eli Lilly announced the rationale of the acquisition is to help them expand its portfolio of drugs
- On May 11th, **Novartis AG**, a Swiss based multinational pharmaceutical company, announced that the **FDA** has expanded the use of its relapsing multiple sclerosis (MS) drug Gilenya to treat children and adolescents. Gilenya is the first FDA-approved drug to treat pediatric patients suffering from relapsing MS
- On May 4th, **Novartis AG** announced that the **FDA** had approved combination therapy to treat an aggressive type of thyroid cancer. The therapy uses Novartis' Tafinlar and Mekinist and was approved to treat anaplastic thyroid cancer that is unable to be surgically removed
- On May 7th, **Athenahealth**, a company that provides network-enabled services for healthcare, announced that **Elliott Management** has made a US\$6.9 billion unsolicited takeover bid. Elliott has proposed an offer of US\$160 per share in cash, which represents a 27% premium to the prior days closing price. On May 15th Elliott announced that Athenahealth still has not responded to the takeover bid.
- On May 7th, **Lannett Company Inc.**, a U.S. based generic pharmaceutical manufacturing company, announced it has acquired a portfolio of generic drug products from **Endo International plc**. The portfolio includes 23 approved products and one pending drug application and Endo will be compensated through future milestone payments in addition to an undisclosed upfront cash payment. The portfolio of products creates new, near-term revenue and profitability streams for Roche. For the twelve months that ended in March 2018 the combined sales of the acquired products were over US\$175 million

Relative Performance Index



Note 1: For the period May 1st to May 14th, 2018

US Healthcare Watchlist Constituents: Johnson & Johnson, Pfizer Inc., Roche Holding AG, Novartis AG, Merck & Co., Inc., AbbVie Inc., Amgen Inc., Medtronic plc, Gilead Sciences, Inc., Bayer AG, Abbott Laboratories, Bristol-Myers Squibb, GlaxoSmithKline plc, Eli Lilly and Company, AstraZeneca PLC, Celgene Corporation, Allergan plc, Boston Scientific Corporation, Mylan N.V., Teva Pharmaceutical Industries, Mallinckrodt Public Limited Company, Endo International plc

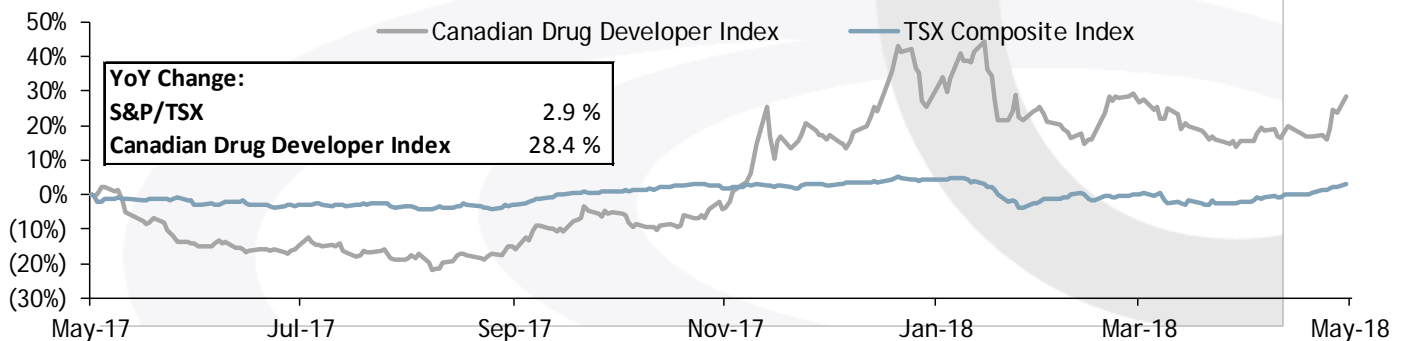


CANADIAN DRUG DEVELOPERS

News Scan¹

- The Canadian Drug Developers Index gained approximately 28.4% over the last twelve months, while the TSX Composite Index gained 2.9% over the same period. Some events making news this month:
- On May 9th, **Aquinox Pharmaceuticals Inc.**, a clinical-stage pharmaceutical company, and **Astellas Pharma Inc.**, a Japanese pharmaceutical company, announced an exclusive licensing agreement for rosiptor in the Asia-Pacific region. Rosiptor, Aquinox's lead drug candidate treats interstitial cystitis/bladder pain syndrome. The company is expected to receive an upfront payment of C\$25M, and potentially over C\$100M in additional milestone payments and royalties
- On May 9th, **Aquinox Pharmaceuticals** also announced that **BlackRock Inc.**, a large institutional investor, decreased its holdings by 26.1% to 4.32%. The institutional investor now owns 1,014,297 shares of the company's stock after selling 357,597 shares
- On May 4th, **Tetra Bio-Pharma Inc.**, a biopharmaceutical company focused on cannabinoid-based drugs, and **Azevedos Industria Farmaceutica**, a Portuguese pharmaceutical brand, announced that they have signed a binding term sheet for the marketing and distribution of PPP001 in Portugal. Tetra is eligible to receive an upfront payment, milestone payments and will be paid a share of the profits generated by the sales of PPP001, and Azevedos will be responsible for registering, marketing, and distributing the product in Portugal
- On May 1st, **Resverlogix Corp.**, a late-stage clinical biotechnology company, announced its final stages of closing documentation of its US\$30M senior secured loan with Third Eye Capital. The alternate lending firm will receive 3,500,000 common share purchase warrants exercisable for three years at \$1.40 per share

Relative Performance Index



Note 1: For the period May 1st to May 14th, 2018

Canadian Drug Developers Constituents: ProMetic Life Sciences Inc., Clementia Pharmaceuticals Inc., Aurinia, Pharmaceuticals Inc., Arbutus Biopharma Corporation, Resverlogix Corp., Aquinox Pharmaceuticals, Inc., Zymeworks Inc., ImmunoVaccine Inc., InMed Pharmaceuticals Inc., Sierra Oncology, Inc., Tetra Bio-Pharma Inc., Oncolytics Biotech Inc., Cardiome Pharma Corp., Acerus, Pharmaceuticals Corporation, ProMIS Neurosciences Inc., Aeterna Zentaris Inc., Trillium Therapeutics Inc.

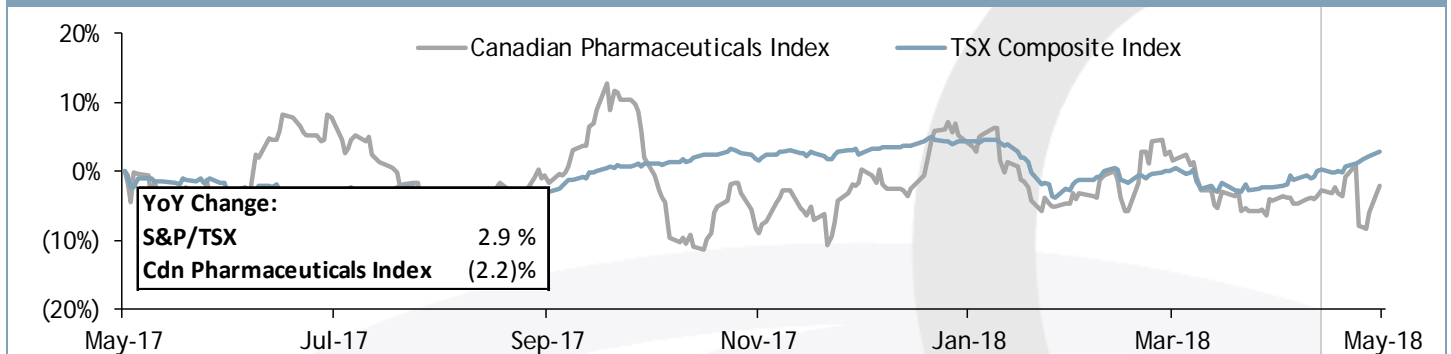


CANADIAN PHARMACEUTICALS

News Scan¹

- The Canadian Pharmaceuticals Index lost approximately 2.2% over the last twelve months, while the TSX Composite Index gained 2.9% over the same period. Some events making news this month:
- On May 2nd, **Concordia International Corp.**, an international specialty pharmaceutical company, announced a recapitalization transaction that would raise US\$586.5 million and reduce its outstanding debt by approximately US\$2.4 billion. The recapitalization would result in affected secured debtholders receiving cash and new secured debt in exchange for their existing secured claims. In connection to the transaction, the Ontario Superior Court of Justice issued an order authorizing a meeting for affected debtholders and shareholders to vote on the CBCA plan. The vote is to be held in June
- On May 1st, **Theratechnologies Inc.**, a specialty pharmaceutical company, announced that its antiretroviral Trogarzo is commercially available in the United States. The injection is a treatment for human immunodeficiency virus type 1 (HIV-1) infection in heavily treatment-experienced adults with multidrug resistant HIV-1 failing their current antiretroviral regimen

Relative Performance Index



Note 1: For the period May 1st to May 14th, 2018

Canadian Pharmaceuticals Constituents: Valeant Pharmaceuticals International, Inc., Knight Therapeutics Inc., Concordia International Corp., Aralez Pharmaceuticals Inc., Theratechnologies Inc., Zomedica Pharmaceuticals Corp.

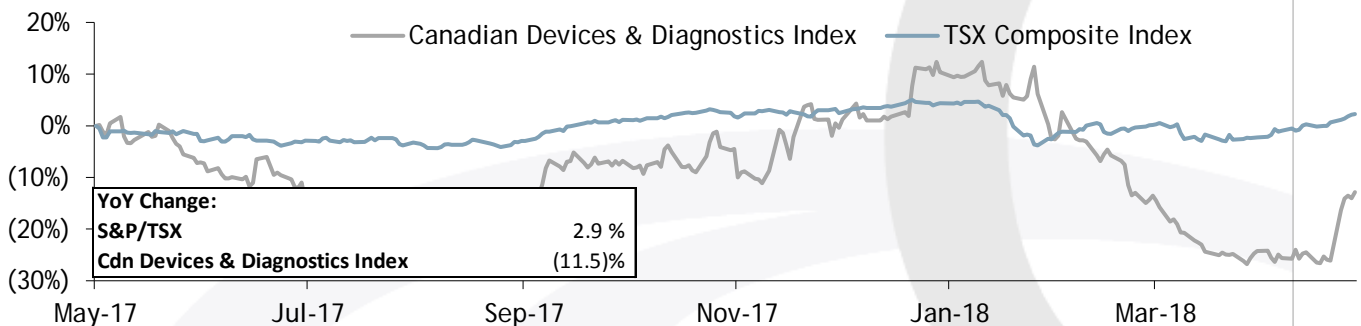


CANADIAN DEVICES & DIAGNOSTICS

News Scan¹

- The Canadian Devices & Diagnostics index lost approximately 11.5% over the last twelve months, lagging the TSX Composite Index which gained 2.9% over the same period. Newsmakers for May 2018:
- On May 9th, **ChroMEDx**, a medical technology company, announced it acquired **UX Data Sciences Corp.** for an undisclosed amount. UX is a medical technology and data science company that develop system solutions for improving, tracking and monitoring patient compliance and medication adherence. UX announced that the rationale for this transaction was to combine resources and consolidate management teams to help nurture innovation and accelerate product development
- On May 9th, **TSO3**, a producer of low-temperature sterile reprocessing solutions for medical devices, announced that it obtained clearance from U.S. regulators for its new product called STERIZONE VP4 Sterilizer. The clearance for STERIZONE will allow a hospital to terminally sterilize gastrointestinal endoscopes that have dimensions for the intended use
- On May 1st, **CRH Medical Corporation**, a commercial healthcare products and services company, announced that it has acquired a 51% interest in **Western Ohio Sedation Associates** for an undisclosed amount. Western Ohio provides anesthesia services to three surgical centres in Ohio and is CRH's first acquisition in Ohio. Western Ohio has an estimated average revenue of US\$ 5.3 million

Relative Performance Index



Note 1: For the period May 1st to May 14th, 2018

Canadian Devices and Diagnostics Constituents: CRH Medical Corporation, TSO3 Inc., Titan Medical Inc., Opsens Inc., Neovasc Inc., ChroMedX Corp., Profound Medical Corp., Covalon Technologies Ltd., Spectral Medical Inc., Hamilton Thorne Ltd.

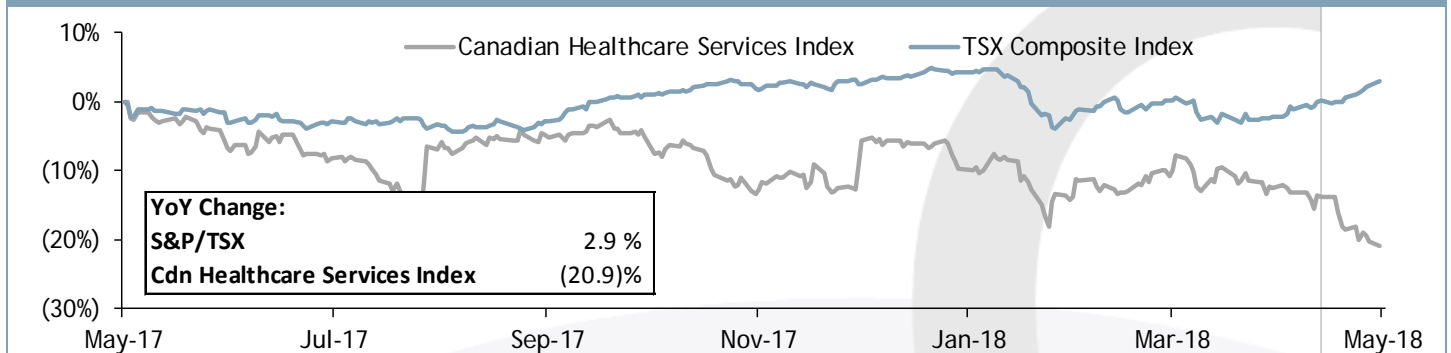


CANADIAN HEALTHCARE SERVICES

News Scan¹

- Last twelve-month performance of the Canadian Healthcare Services index decreased 20.9%, while the TSX Composite Index increased 2.9% over the same period. In May, the following occurred in the Canadian healthcare services space:
- On May 14th, **Medical Facilities Corporation**, a medical supply company, announced that the TSE approved its notice of intention to make a normal course issuer bid for up to 619,665 of its outstanding common shares, which represents 2% of all common shares outstanding
- On May 11th, **Akumin Inc.**, a diagnostic imaging centers company, announced it has closed its acquisition of certain assets of four diagnostic imaging centers located in Florida, one of Akumin's core geographic markets. As part of the purchase price, the company has also assumed certain liabilities

Relative Performance Index



Note 1: For the period May 1st to May 14th, 2018

Canadian Healthcare Services Constituents: Sienna Senior Living Inc., Extencicare Inc., Medical Facilities Corporation, Akumin Inc, Centric Health Corporation

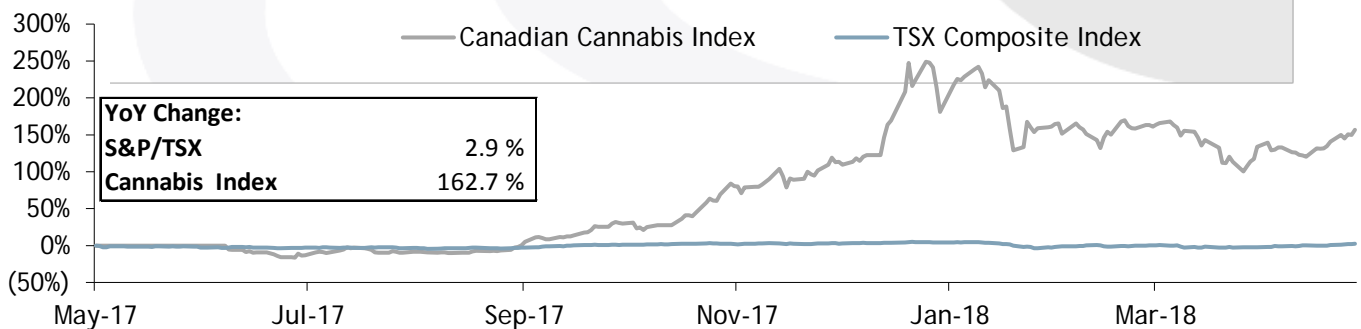


CANNABIS

News Scan¹

- The number of authorized licensed producers is holding at 104. Last twelve-month performance of the Cannabis index was approximately 162.7% dwarfing the 2.9% gain of the TSX Composite Index over the same period. Highlights of cannabis news for May 2018:
- On May 14th, **Aurora Cannabis Inc.**, a licensed producer of medical cannabis based in Vancouver, announced that it will buy **MedReleaf Corp** for C\$3.2 billion in an all stock deal. Aurora and MedReleaf together expect to produce over 570,000 kilograms of cannabis per year across their nine facilities in Canada and two facilities in Denmark and will be the largest company in the fast-growing cannabis space. Aurora offered to buy MedReleaf shares for C\$29.44 per share, which represents a 18.2% premium to MedReleaf’s prior business days closing price the combined firm is estimated to be worth as much as C\$7 billion
- On May 14th, **Canopy Growth Corporation**, a medical marijuana company based in Smiths Fall Ontario, announced that it has entered into a non-binding agreement to purchase the remaining 33% stake of **BC Tweed Joint Ventures Inc.** that were not owned by Canopy Growth. Canopy growth will issue up to C\$374 million worth of shares in Canopy Growth to the minority shareholders of BC Tweed
- On May 7th, **Emerald Health Therapeutics**, a producer of medical cannabis based in Vancouver, announced that it had acquired all of the issued and outstanding securities of **8611165 Canada Inc**, which is a licensed producer of cannabis in Saint-Eustache, Québec. This acquisition also included 8611165 Canada Inc’s affiliate **9353-8460 Québec Inc** and are known together as Agro-Biotech. Agro-Biotech’s assets include a 75,000 sq. ft. purpose-built facility and a Health Canada cultivation license
- On May 3rd, **Harvest One Cannabis Inc**, an early-entry global cannabis company based in Vancouver, announced that it had entered into a definitive agreement to acquire **Dream Water** for US\$12.5 million in cash and C\$18.5 million in shares at a price of C\$1.00 per share. This transaction will give Harvest One a ready-made consumer goods marketing, distribution and product development division
- On May 1st, **Aurora Cannabis Inc.** announced that they had completed the acquisition of all issued outstanding shares of **CanniMed Therapeutics Inc.** that it did not previously own. Approximately 1.2 million CanniMed shares were acquired by Aurora for about 3.4 million Aurora shares and C\$1.7 million in cash

Relative Performance Index



Note 1: For the period May 1st to May 14th, 2018

Cannabis Index Constituents: Canopy Growth Corporation, Aurora Cannabis Inc., Aphria Inc., MedReleaf Corp., CannTrust Holdings Inc., CanniMed Therapeutics Inc., Cannabis Wheaton Income Corp., OrganiGram Holdings Inc., The Supreme Cannabis Company, Inc., The Hydropharmacy Corporation



Origin Merchant Partners

220 Bay Street, Suite 1500

P.O. Box 23

Toronto, Ontario

M5J 2W4

OMP Healthcare Team:

Cathy Steiner

Principal

T: 416-775-3602

Cathy.Steiner@originmerchant.com

Jim Osler

Principal

T: 416-800-0784

jim.osler@originmerchant.com

Jim Meloche

Principal

T: 416-800-0873

Jim.meloche@originmerchant.com