



Healthcare Industry Update

Monday, April 30th, 2018



THE ORIGIN RX

Big Deal!

Fifth time seems to be a charm, at least when it comes to the combination of Takeda Pharmaceutical Co. and Shire plc. Over the last month, Takeda has been doing its best to charm Shire. Shire has been holding out for a higher price and more cash consideration and last week's offer (number 5), estimated at roughly US\$64B, is about \$4B higher than their first - mission accomplished! Shire may agree to recommend this deal to their shareholders, but completion remains subject to both sides' due diligence and board approval by a May 8 deadline (which could be extended further).

Shire itself has grown aggressively by acquisition, with some 20 deals completed over the last 20+ years. The company has expanded from a strong ADHD franchise into one of the largest global pharma companies focused on treating rare diseases in a number of therapeutic areas including hematology, ophthalmology, GI and CNS. But robust revenue and earnings growth together with a healthy product development pipeline haven't been able to offset investor worries about a heavy debt load and intensifying competition in certain therapeutic areas, causing Shire's share price performance to lag over the last few months.

For Takeda, combining with Shire would significantly grow its sales and product development pipeline, enabling the company to get out in front of forecast sales declines as significant products are slated to come off-patent in 2020 and beyond. Realization of the benefits and synergies will depend on a number of factors, including the purchase price amount and structure to finance it as well as the speed and effectiveness of integration. But Takeda is no stranger to M&A, most recently with the \$5B purchase of Ariad in 2017, to add lung cancer and leukemia drugs as well as an attractive pipeline.

If successful, Takeda's proposal will wind up being a merger - the offer of about 46% stock and 54% cash will give Shire shareholders about 50% of the combined company. But a better offer with still more cash has yet to emerge. Allergan declared its interest in Shire shortly after the initial Takeda bid, but they backed off within hours after their shares sold off.

It's particularly interesting to note that some 60 pharma companies twenty years ago represent something closer to a dozen companies today. Consolidation has been used to execute on a variety of growth strategies, ranging from eliminating the competition to leveraging their R&D, and from growing revenue in existing therapeutic areas to adding new ones.

What does this mean for us in the Canadian healthcare landscape? Our space comprises dozens of small cap (<\$500M) companies, with some growing larger. Looking at cannabis companies, the ACMPR has doled out 104 cultivation licenses, with twice that number estimated to be in the final stages of the licensing process. The challenge lies in creating scale, sustainable competitive advantage and shareholder value. If you are at all interested in exploring whether a strategic transaction may make sense for your company, we are available to get together and discuss.

And while I have your attention let me give you a friendly reminder to file and pay your Canadian taxes today!

CATHY STEINER, PRINCIPAL





BIGGEST MOVERS

Recent News¹

Markets have inched forward in the second half of April, with the TSX increasing 2.8% and the Nasdaq increasing 3.6%. 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:

- **Sientra, Inc.** (NasdaqGS:SIEN, +30%): Sientra is a medical aesthetics company that develops and sells products to plastic surgeons in the United States. Strong recent share performance was driven by the announcement that the company received FDA approval for its PMA supplement, allowing for commercialization of its OPUS-branded products
- **BeyondSpring Inc.** (NasdaqCM:BYSI, +25%): BeyondSpring is a clinical-stage biopharmaceutical company focused on the development of transformative cancer therapies. Shares performed well of late after the company revealed positive preclinical data from its lead asset, Plinabulin, at the American Association for Cancer Research annual meeting
- **Zymeworks Inc.** (TSX:ZYME +25%): Zymeworks is a clinical-stage biopharmaceutical company that engages in the discovery, development, and commercialization of bio-therapeutics for the treatment of cancer in Canada. Strong share performance was driven by the announcement that **Celgene Corporation** exercised its right to expand its collaboration agreement for the research, development, and commercialization of bispecific antibody therapeutics using Zymeworks' Azymetric platform
- **Akcea Therapeutics, Inc.** (NasdaqGS:AKCA, +17%): Akcea Therapeutics is a late-stage biopharmaceutical company focused on developing and commercializing drugs to treat patients with cardiometabolic diseases caused by lipid disorders in the United States and internationally. Strong recent performance has been driven by the announcement of the company's licensing agreement with **Ionis Pharmaceuticals Inc.** for exclusive worldwide rights for Inotersen and AKCEA-TTR-LRx
- **Akorn, Inc.** (NasdaqGS:AKRX, -26%): Akorn Pharmaceuticals is an American generic pharmaceuticals manufacturer based in Lake Forest, Illinois. Share prices recently fell after **Fresenius SE** announced it will no longer pursue the US\$4.3 billion acquisition of Akorn, while alleging it was misled concerning operational weaknesses of the company
- **Aceto Corp.** (NasdaqGS:ACET, -64%): Aceto is an international company engaged in the marketing, sale and distribution of human health products, pharmaceutical ingredients and performance chemicals. The recent share price decline was driven by management's announcement that it expects to record an asset impairment charge of US\$230 to US\$260 million on currently marketed and pipeline products due to intense competitive and pricing pressures

Note 1: For the period April 16th to April 27th, 2018

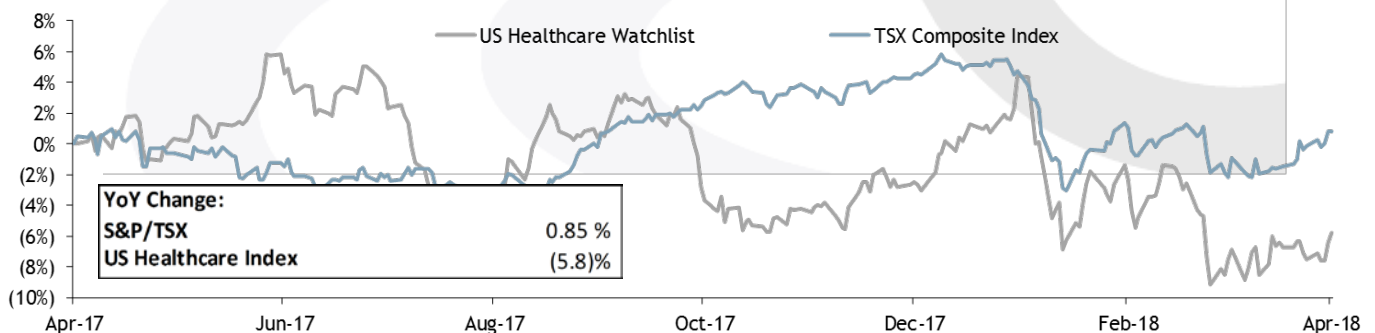


US HEALTHCARE WATCHLIST

News Scan¹

- The US Healthcare Watchlist index lost approximately 6% over the last twelve months, while the TSX Composite Index gained 0.9% over the same period. Some events making news this month:
- On Apr. 25th, **Takeda Pharmaceuticals Co. Ltd.** announced it reached a tentative agreement to acquire **Shire plc** for approximately US\$64 billion. Takeda offered the equivalent of £49 per share in cash and stock, representing a 25% premium to the prior day closing price. Shire stated its shareholders would own about 50% of the merged company, whose shares will trade in Japan and the United States. Both companies have until May 8th to complete due diligence
- On Apr. 20th, **Biogen Inc.** and **Ionis Pharmaceuticals, Inc.** announced the expansion of their strategic collaboration through a new ten-year collaboration agreement to develop novel antisense drug candidates for a broad range of neurological diseases. Under the terms of the collaboration, Biogen will pay Ionis US\$1 billion in cash, which will include US\$625 million to purchase shares of Ionis at an approximately 25% cash premium, and a US\$375 million upfront payment. Biogen will have the option to license therapies arising out of this collaboration and will be responsible for their development and commercialization
- On Apr. 23rd, **Humana Inc.** and private equity firms **TPG Capital** and **Welsh Carson, Anderson & Stowe** announced they will acquire **Curo Health Services** for approximately US\$1.4 billion, in which Humana will have a 40% minority interest. Humana expects to fund its portion of the transaction through the use of parent company cash and does not anticipate a material impact to earnings in 2018 from the pending transaction, which is expected to close in the summer of 2018
- On Apr. 19th, **Procter & Gamble Co.** announced it will acquire **Merck KGaA's** consumer health unit for approximately US\$4.2 billion, giving it vitamin brands such as Seven Seas and greater exposure to Latin American and Asian markets. Merck's consumer health business is active across 44 countries and includes more than 900 products. The acquisition replaces the PGT Healthcare joint venture P&G had with **Teva Pharmaceutical Industries**, which will be terminated July 1st, 2018
- On Apr. 16th, **Shire plc** announced it will sell its Oncology business to **Servier S.A.S.** for approximately US\$2.4 billion. The Oncology business includes in-market products such as ONCASPAR and ONIVYDE, and a portfolio with products under FDA review. Shire stated it would consider returning proceeds from the sale to shareholders through a buyback and that further selective disposals of non-strategic assets were possible

Relative Performance Index



Note 1: For the period April 16th to April 27th, 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

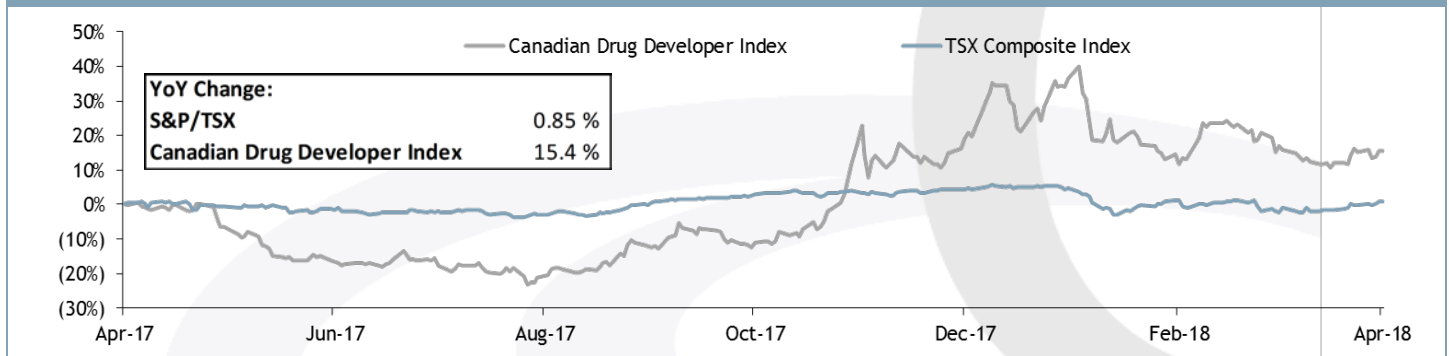


CANADIAN DRUG DEVELOPERS

News Scan¹

- Last twelve-month performance of the Canadian Drug Developer index was an impressive 15%, significantly outperforming the TSX Composite Index which gained 0.9% over the same period. In the news this month:
- On Apr. 17th, **Resverlogix Corp.** announced a proposed composite unit offering, composed of common shares and common share purchase warrants. The net proceeds of the offering will be used to fund research and development activities, including but not limited to, clinical trial activities related to the Company's Phase 3 BETonMACE trial, general and administrative expenses, working capital needs and other general corporate purposes. The size and price of the offering are yet to be determined
- On Apr. 23rd, **Acerus Pharmaceuticals Corp.**, a specialty pharmaceutical company focused on the development and distribution of pharmaceutical products for men's and women's health, announced it received an additional C\$2 million under its secured term credit facility with **Quantius Inc.** The additional C\$2 million represents the second tranche of the C\$5 million Quantius facility entered into late in 2017 and was conditional, on Acerus achieving certain commercial milestones based on total monthly prescriptions and sales levels
- On Apr. 25th, **Oncolytics Biotech Inc.**, a development stage biopharmaceutical company focusing on the discovery and development of pharmaceutical products for the treatment of cancer, filed a shelf registration in the amount of C\$150 million

Relative Performance Index



Note 1: For the period April 16th to April 27th, 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.

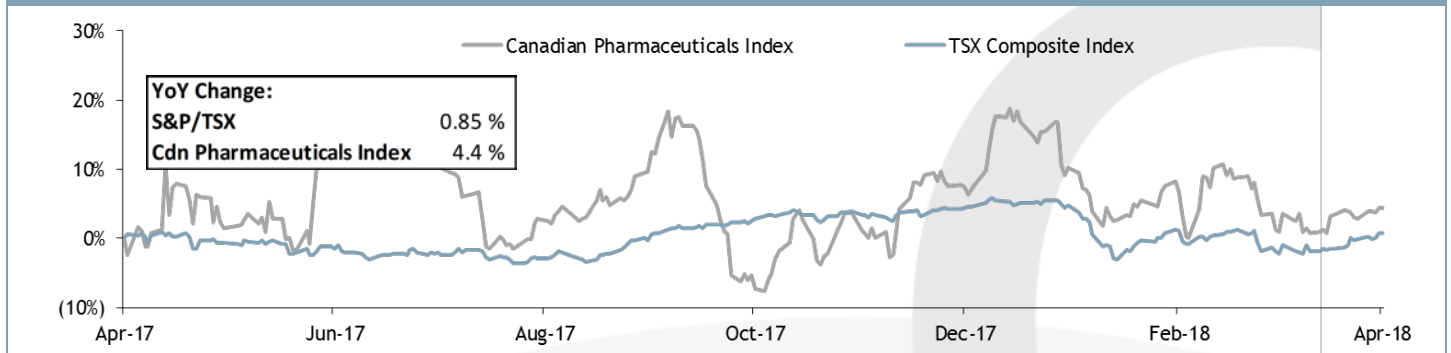


CANADIAN PHARMACEUTICALS

News Scan¹

- The Canadian Pharmaceutical index gained approximately 4% over the last twelve months, beating the TSX Composite Index which gained 0.9% over the same period. News for Canadian-listed pharmaceutical companies in April 2018:
- On Apr. 20th, **Knights Therapeutics Inc.** announced Health Canada approved PROBUPHINE for the management of opioid dependence in clinically stabilized patients. The company signed an exclusive distribution and sublicense agreement with **Braeburn Pharmaceuticals Inc.** in February 2016 granting Knight the exclusive right to distribute PROBUPHINE in Canada
- On Apr. 24th, **Theratechnologies Inc.** announced it will seek regulatory approval from the European Medicines Agency (EMA) for Trogarzo using efficacy and safety data from the clinical trials submitted to the FDA. The decision follows meetings held last week in Europe with the Rapporteur and Co-Rapporteur countries as well as with representatives from the EMA

Relative Performance Index



Note 1: For the period April 16th to April 27th, 2018

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

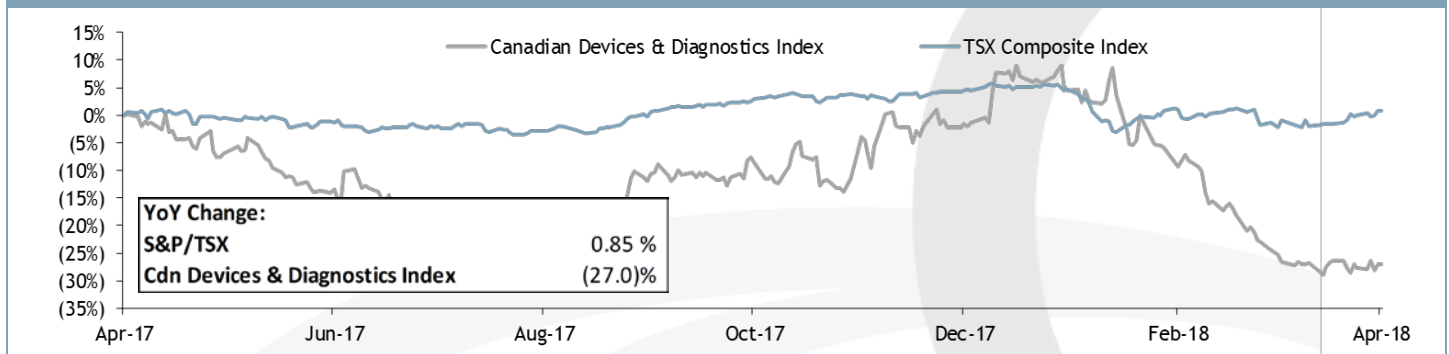


CANADIAN DEVICES & DIAGNOSTICS

News Scan¹

- The Canadian Devices & Diagnostics index lost approximately 27% over the last twelve months, lagging the TSX Composite Index which gained 0.9% over the same period. Newsmakers for April 2018:
- On Apr. 23rd, **Spectral Medical Inc.**, a company focused on the development and commercialization of treatment for septic shock, announced a non-brokered private placement of 17.7 million units at a price of C\$0.30 per unit for gross proceeds of C\$5.3 million. Each unit is comprised of one common share and one-half share purchase warrant. The proceeds will be used for further clinical study of the PMX cartridge and the accompanying regulatory pursuit for FDA approval and for general corporate purposes, and approximately 17% of the proceeds will come from participating company insiders
- On Apr. 26th, **TSO₃ Inc.**, a developer of sterilization technology for medical devices in healthcare settings, announced that an independent laboratory completed studies demonstrating the efficacy of the STERIZONE VP4 Sterilizer for inactivation of prions. The STERIZONE VP4 Sterilizer is the only terminal sterilization method that is FDA cleared to sterilize multi-channelled flexible endoscopes of up to 3.5 meters in length, and the data from the aforementioned study enables the company to pursue approval from regulators in Europe

Relative Performance Index



Note 1: For the period April 16th to April 27th, 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.

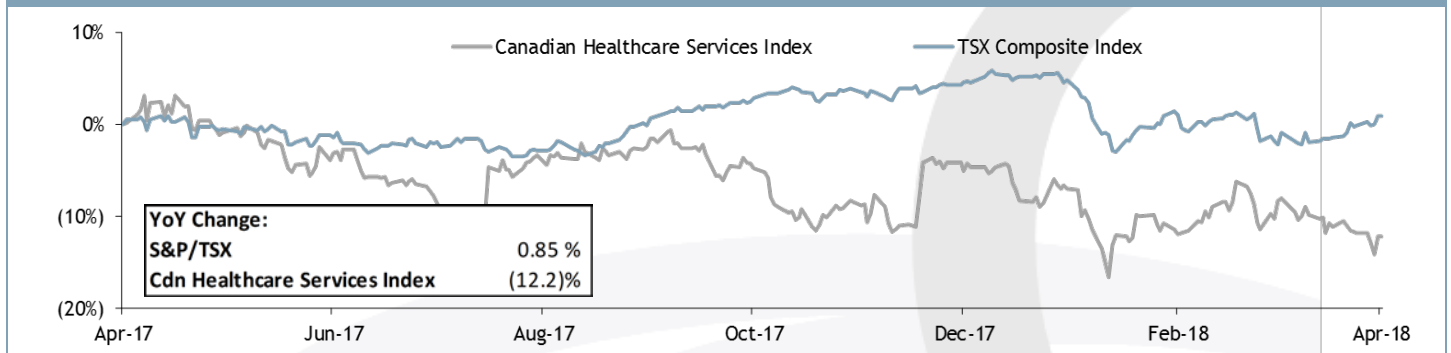


CANADIAN HEALTHCARE SERVICES

News Scan¹

- The Canadian Healthcare Services index experienced a decline of approximately 12% over the last twelve months, lagging the TSX Composite Index which gained 0.9% over the same period. April 2018 news highlights among the group:
- On Apr. 25th, **Extendicare Inc.**, a senior care service provider in Canada, announced it issued C\$126.5 million aggregate principal amount of 5% convertible unsecured subordinated debentures due April 2025. The debentures are listed for trading on the Toronto Stock Exchange under the symbol EXE.DB.C. The net proceeds from the offering will be used to partially fund the redemption of the company's outstanding 6.00% convertible unsecured subordinated debentures due September 2019. The balance of the funds required for the redemption of the 2019 debentures will be funded from cash on hand
- On Apr. 23rd, **Sienna Senior Living Inc.**, a senior housing provider with 75 residences across key markets in Canada, announced it intends to exercise its right to redeem on May 23rd, 2018 all of its outstanding 4.65% extendible convertible unsecured subordinated debentures due June 2018. The C\$44.4 million of outstanding debentures will be redeemed at a price of C\$1,018.22 per C\$1,000 principal amount, representing accrued and unpaid interest

Relative Performance Index



Note 1: For the period April 16th to April 27th, 2018

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

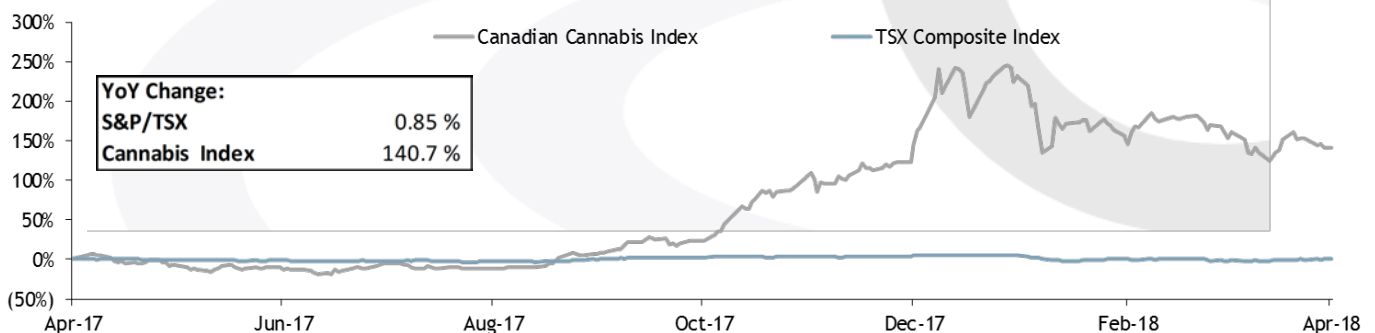


CANNABIS

News Scan¹

- Last twelve-month performance of the Cannabis index was approximately 141%, dwarfing the 0.9% gain of the TSX Composite Index over the same period. Highlights of cannabis news for April 2018:
- On Apr. 23rd, [The Cannabis Canada Association](#), [Canadian Medical Cannabis Council](#) and [Canopy Growth Corp.](#) announced they have joined together to create a single national industry association for the sector, to be called the [Cannabis Canada Council](#) (C3). The Council's mission is to act as the national voice for industry members in the promotion of industry standards, support the development, and growth and integrity of the regulated cannabis sector
- On Apr. 16th, [Canopy Growth Corp.](#) announced it acquired [Annabis Medical s.r.o.](#), a company that imports and distributes medical cannabis products through pharmacy channels across the Czech Republic, for approximately C\$2.5 million. Annabis Medical founder and CEO, Dr. Robin Kazik, will continue to lead and grow the Czech subsidiary as part of the larger Canopy Growth family of businesses
- On Apr. 16th, [Aurora Cannabis Inc.](#) announced it is acquiring approximately 71 acres of land in Medicine Hat, Alberta, where the company intends to commence construction on a new high-technology hybrid greenhouse cannabis production facility. The new facility, named Aurora Sun, will be 1.2 million square feet and add 150,000 kg of annual production to Aurora's 280,000 kg funded capacity
- On Apr. 18th, [CannTrust Holdings Inc.](#) announced it entered into a letter of intent with [Grey Wolf Animal Health Inc.](#), a specialty animal health company focused on developing, acquiring and in-licensing companion animal health products, to develop cannabis products to support the well-being of pets. Under the terms of the partnership, Grey Wolf and CannTrust will be equal partners in a newly created subsidiary of Grey Wolf
- On Apr. 18th, [Canopy Growth Corp.](#) announced it entered into an agreement to supply [Yukon Liquor Corporation](#) with up to 900 kg of cannabis product over the next three years. Once official, the agreement will mark Canopy's fifth agreement with a province or territory

Relative Performance Index



Note 1: For the period April 16th to April 27th, 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



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