

The Narwhal List

Measuring the Financial Velocity of Canada's Leading
Technology Companies



Contents

A Failure to Scale	3
Financial Velocity	5
The Narwhal List	6
The Profile of a Narwhal	8
Unicorn Financial Velocity	9
Opportunities	11
Methodology	12
About the Impact Centre	15

A Failure to Scale

“The transition to the Unicorn scale and possibly public listings may give our firms the ability to compete on their own merits and have the currency necessary in public stock to fund acquisitions throughout the world that will lead to greater scale and world-class status.”

Our previous Impact Brief (A Failure to Scale, February 2017) set out to show that relative to US firms, Canadian companies have historically slower growth rates that make them less appealing to potential investors. We concluded that Canadian businesses have the potential to overcome this issue and position themselves as more attractive investments, but they must be more aggressive, raising capital earlier, more often, and in larger amounts.

Emerging technology companies that wish to attain a significant share of global markets must be able to attract substantial financing. Certainly, this has been the trend for the high-profile group of startups also known as Unicorns. A term coined by the technology markets intelligence firm, CB Insights, a Unicorn is defined as a private company with a valuation at or above \$1 billion. All of these firms have been propelled to world-class status by significant injections of early- and late-stage venture capital (VC) funds. In the early stages, Canadian companies must accelerate their growth and their consumption of capital to earn the returns necessary to attract later-stage VC financing, particularly if they wish to reach and compete at the Unicorn scale.

In order to provide a tool to enable entrepreneurs and investors to gauge how attractive firms are from a financial standpoint, we have, in this report, introduced a way to measure Financial Velocity. Financial Velocity is defined here as the amount of funding a firm has raised divided by the number of years it has been in existence. It is expressed in millions of dollars per year. This measure reports the rate at which companies raise and consume capital. We have assembled a list of the top Canadian businesses based on Financial Velocity and are pleased to introduce the Narwhal List. (The term Narwhal was first coined by Brent Holliday of the Vancouver-based Garibaldi Capital Advisors who graciously allowed us to use it.)

The Narwhal List identifies a set of young Canadian companies that have the potential to become companies on the world stage. It also points to possible financial pathways to turn these companies into Unicorns, which are closer to reaching public financial markets. The transition to the Unicorn scale and possibly public listings may give our firms the ability to compete on their own merits and have the currency necessary in public stock to fund acquisitions throughout the world that will lead to greater scale and world-class status.

A full up-to-date list of Narwhals is published at www.impactcentre.ca/narwhal. The following short list shows the top Canadian companies as at December 31, 2016.

The Narwhal List Top 10

Table 1

	Company	Founded	Total Funding (USD)	Financial Velocity (USD / year)	Sector	City
1	BlueRock Therapeutics	2016	225.0	225.0	Healthcare	Toronto
2	DalCor Pharmaceuticals	2015	150.0	75.0	Healthcare	Montreal
3	Thalamic Labs	2012	134.5	26.9	Consumer	Kitchener
4	Hootsuite	2008	229.9	25.5	Internet	Vancouver
5	Turnstone Biologics	2015	50.0	25.0	Healthcare	Ottawa
6	Ilkos Therapeutics	2016	15.9	15.9	Healthcare	Montreal
7	Real Matters	2004	203.8	15.7	Internet	Markham
8	Clementia Pharmaceuticals	2011	92.5	15.4	Healthcare	Dorval
9	Kik Interactive	2009	115.8	14.5	Mobile & Tel	Waterloo
10	Wealthsimple	2014	40.3	13.4	Internet	Toronto

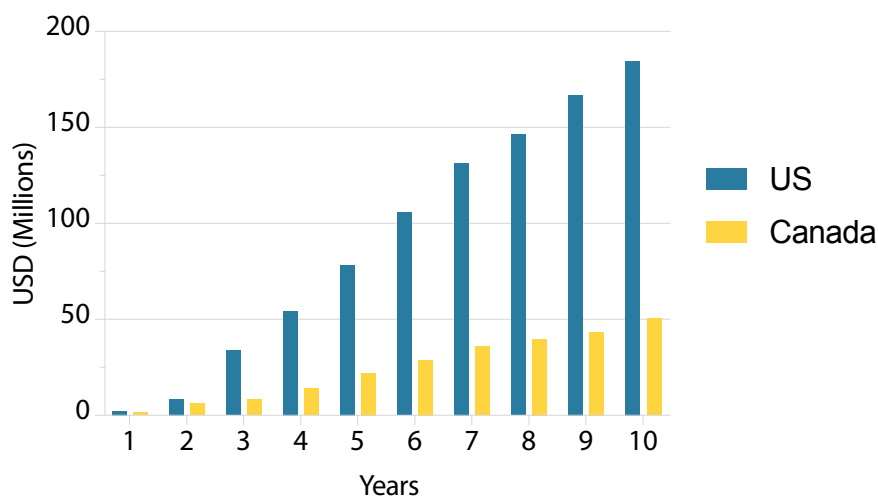
Financial Velocity

To identify potential winners and Canadian companies ready for further investments, we must better understand how to determine a company's growth potential. Thus we have developed a methodology based on the measurement of Financial Velocity.

Financial Velocity is defined here as the amount of funding a firm has raised divided by the number of years it has been in existence. This metric is expressed in millions of dollars. In our last study (*A Failure to Scale*, February 2017), we looked at how Canadian firms approach fundraising and showed that they typically wait longer before they start seeking funds, raise funds less often, and raise less money over time. We also made the case that these fundraising patterns have a significant impact on the outside appeal of Canadian firms, which are perceived as unattractive investments by both local and foreign VC firms.

The concept of Financial Velocity is a particularly important metric because it speaks directly to a firm's acquisition and consumption of capital as it grows. Figure 1 (reproduced from our last study) shows the Financial Velocity of selected Canadian and US companies over a span of 10 years, demonstrating a remarkable difference between the two countries in terms of capital raised.

An analysis of the amounts raised since inception for selected Canadian and US private companies
Figure 1



The Narwhal List

In 2014, Brent Holliday of the Vancouver-based Garibaldi Capital Advisors began referring to Canadian technology companies that had reached a valuation of \$1 billion or above as Narwhals, a playful reference to US Unicorns. He published data sets showing the most valuable Canadian tech firms in his Narwhal Club and also identified emerging Narwhals. Since the list produced by Brent Holiday had not been kept up to date, he graciously allowed us to use the term he originated. As a result, we are pleased to publish an updated Narwhal List with the top 50 Canadian companies in terms of Financial Velocity (Table 2).

The Narwhal List
Table 2

	Company	Founded	Total Funding (USD)	Financial Velocity (USD/year)	Sector	City
1	BlueRock Therapeutics	2016	225.0	225.0	Healthcare	Toronto
2	DalCor Pharmaceuticals	2015	150.0	75.0	Healthcare	Montreal
3	Thalmic Labs	2012	134.5	26.9	Consumer	Kitchener
4	Hootsuite	2008	229.9	25.5	Internet	Vancouver
5	Turnstone Biologics	2015	50.0	25.0	Healthcare	Ottawa
6	Ilkos Therapeutics	2016	15.9	15.9	Healthcare	Montreal
7	Real Matters	2004	203.8	15.7	Internet	Markham
8	Clementia Pharmaceuticals	2011	92.5	15.4	Healthcare	Dorval
9	Kik Interactive	2009	115.8	14.5	Mobile & Tel	Waterloo
10	Wealthsimple	2014	40.3	13.4	Internet	Toronto
11	Northern Biologics	2014	40.0	13.3	Healthcare	Toronto
12	Lendified	2015	24.0	12.0	Internet	Toronto
13	Lightspeed POS	2005	126.0	10.5	Mobile & Tel	Montreal
14	Zymeworks	2003	142.9	10.2	Healthcare	Vancouver
15	HLS Therapeutics	2014	30.0	10.0	Healthcare	Caledon
16	Hopper	2007	99.0	9.9	Mobile & Tel	Montreal
17	LEAGUE	2014	29.0	9.7	Internet	Toronto
18	D2L	1999	165.0	9.2	Internet	Kitchener
19	Xagenic	2010	64.0	9.1	Healthcare	Toronto
20	Highland Therapeutics	2008	81.7	9.1	Healthcare	Toronto
21	D-Wave Systems	1999	157.7	8.8	Hardware	Burnaby
22	Vidyard	2010	60.7	8.7	Internet	Kitchener
23	YourCityDeals	2011	50.0	8.3	Internet	Ottawa
24	Esperas Pharma	2015	16.5	8.3	Healthcare	Montreal
25	SecureKey Technologies	2008	72.9	8.1	Internet	Toronto

The Narwhal List (cont)

Table 2

	Company	Founded	Total Funding (USD)	Financial Velocity (USD/year)	Sector	City
26	Ranovus	2012	39.3	7.9	Comp Hardware	Ottawa
27	Flipp	2007	76.0	7.6	Internet	Toronto
28	ScribbleLive Technologies	2009	59.0	7.4	Internet	Toronto
29	Wave	2009	58.9	7.4	Internet	Toronto
30	Influitive	2010	49.8	7.1	Internet	Toronto
31	Vitaeris	2016	7.0	7.0	Healthcare	Vancouver
32	FundThrough	2014	20.8	6.9	Internet	Toronto
33	VarageSale	2012	34.0	6.8	Internet	Toronto
34	Visier	2010	46.5	6.6	Internet	Vancouver
35	Peraso Technologies	2008	57.5	6.4	Electronics	Toronto
36	Wattpad	2006	66.8	6.1	Internet	Toronto
37	BuildDirect	1999	108.9	6.0	Internet	Vancouver
38	Vena Solutions	2011	36.0	6.0	Internet	Toronto
39	Coveo	2005	70.0	5.8	Internet	Quebec City
40	Slyce	2012	28.7	5.7	Internet	Calgary
41	Breather	2012	27.5	5.5	Mobile & Tel	Montreal
42	Lendful	2015	10.7	5.3	Internet	Vancouver
43	Bench Accounting	2012	26.2	5.2	Internet	Vancouver
44	Clearpath Robotics	2009	40.8	5.1	Industrial	Kitchener
45	Morgan Solar	2007	50.1	5.0	Energy & Utilities	Toronto
46	AmpMe	2015	10.0	5.0	Mobile & Tel	Montreal
47	Indochino	2007	49.5	5.0	Internet	Vancouver
48	Intelix Technologies	1992	122.4	4.9	Internet	Toronto
49	MSI Methylation Sciences	2007	48.4	4.8	Healthcare	Vancouver
50	Blueprint Software Systems	2004	59.5	4.6	Software	Toronto

The Profile of a Narwhal

The average company on the Narwhal List is almost 8 years old and has raised \$66 million of funding since its inception. The majority of the firms operate in the internet software and services industry and are headquartered in Toronto (Tables 3 and 4).

Breakdown by Industry

Table 3

Industry	Number
Internet software and services	25
Healthcare	13
Mobile software and services	5
Electronics and hardware	5
Other	2

Headquarters of the Top 50 Narwhals

Table 4

Location	Number
Greater Toronto Area	21
Metro Vancouver Regional District	10
Greater Montréal	8
Kitchener/Waterloo	5
Ottawa	3
Quebec City, Calgary, Caledon	3

Unicorn Financial Velocity

As a point of comparison to the Narwhal List, Table 5 shows the ranking of US Unicorns according to their Financial Velocity. The list includes all US-based Unicorns in the CB Insights database as at December 31, 2016. The data suggest a lopsided trend: while only six Unicorns are below a velocity of \$15 million per year, only a small fraction (eight) Canadian Narwhals have velocities above this level.

Unicorn Financial Velocity
Table 5

	Unicorn	Amount Raised (USD)	Valuation (USD)	Financial Velocity (USD/year)		Unicorn	Amount Raised (USD)	Valuation (USD)	Financial Velocity (USD/year)
1	Uber	12,500	68,000	1562.50	24	Domo Technologies	589	2,000	84.19
2	Airbnb	3,950	30,000	438.89	25	Proteus Digital Health	417	1,100	83.44
3	Snapchat	2,610	18,000	435.00	26	SpaceX	1,190	12,000	79.33
4	Lyft	1,850	5,500	370.00	27	Carbon3D	232	1,000	77.33
5	Avant	1,720	2,000	344.00	28	Human Longevity	300	1,200	75.00
6	Social Finance	1,690	4,000	281.67	29	Slack Technologies	540	3,800	67.53
7	WeWork	1,700	16,900	242.86	30	Flatiron Health	313	1,200	62.60
8	STX Entertainment	700	1,500	233.33	31	Instacart	275	2,000	55.00
9	Moderna	1,340	3,000	223.33	32	Vox Media	325	1,000	54.11
10	Magic Leap	1,390	4,500	198.57	33	Bloom Energy	863	2,700	53.94
11	Pivotal	758	2,800	189.50	34	Fanduel	418	1,000	52.19
12	Pinterest	1,320	11,000	188.57	35	Tango Me	373	1,100	46.68
13	Kabbage	1,500	1,000	187.50	36	AppDynamics	415	1,900	46.06
14	Infor	2,630	10,000	175.33	37	Buzzfeed	497	1,700	45.14
15	Palantir Technologies	1,940	20,000	149.23	38	Intarcia Therapeutics	979	5,500	44.51
16	Zenefits	584	2,000	145.91	39	Jawbone	779	1,500	43.27
17	Oscar Health Insurance Co.	728	2,700	145.50	40	JustFab	300	1,000	42.86
18	DraftKings	628	1,350	125.52	41	Appnexus	394	1,200	39.42
19	ContextLogic (dba. Wish)	719	3,000	119.78	42	SurveyMonkey	700	2,000	38.89
20	Cloudera	1,040	4,100	115.56	43	Github	350	2,000	38.89
21	Dropbox	1,110	10,000	111.00	44	OfferUp	194	1,200	38.88
22	Stripe	690	9,200	98.57	45	Compass	193	1,000	38.60
23	Zoox	290	1,550	96.67	46	Blue Apron	193	2,000	38.60

Unicorn Financial Velocity (cont)

Table 5

	Unicorn	Amount Raised	Valuation	Financial Velocity		Unicorn	Amount Raised	Valuation	Financial Velocity
47	Greensky	410	2,000	37.27	73	Apttus	274	1,300	24.91
48	The Honest Company	222	1,700	37.00	74	Zeta Interactive	240	1,000	24.00
49	Credit Karma	369	3,500	36.85	75	Houzz	214	2,300	23.73
50	DocuSign	513	3,000	36.67	76	MuleSoft	259	1,500	23.50
51	Illumio	142	1,000	35.50	77	CloudFlare	182	1,000	22.76
52	Cylance	177	1,000	35.40	78	Zocdoc	226	1,800	22.55
53	Lookout	281	1,000	35.13	79	Kabam	245	1,000	22.23
54	Mozido	314	2,390	34.86	80	23andMe	244	1,100	22.19
55	SimpliVity	278	1,000	34.69	81	Anaplan	240	1,090	21.81
56	Thumbtack	274	1,200	34.23	82	Evernote	204	2,000	20.38
57	Vice Media	770	4,000	33.48	83	Glassdoor	202	1,000	20.15
58	Udacity	161	1,000	32.22	84	Age of Learning	182	1,000	18.15
59	Fanatics	695	3,100	31.59	85	Eventbrite	199	1,000	18.11
60	AppDirect	250	1,040	31.19	86	Mu Sigma	208	1,500	16.00
61	Deem	530	1,350	31.15	87	Medallia	255	1,000	15.94
62	MongoDB	311	1,600	31.10	88	Automattic	191	1,160	15.88
63	Warby Parker	216	1,200	30.91	89	Insidesales.com	199	1,500	15.33
64	Nextdoor	210	1,100	30.03	90	Unity Technologies	199	1,500	15.27
65	Prosper Marketplace	355	1,900	29.58	91	Uptake	45	1,100	15.00
66	Tanium	295	3,500	29.53	92	Qualtrics	220	1,000	14.67
67	Gusto	176	1,000	29.35	93	Ten-X	142	1,200	14.18
68	Okta	229	1,200	28.66	94	SMS Assist	255	1,000	11.59
69	Sprinklr	229	1,800	28.56	95	MarkLogic	173	1,000	10.78
70	Quanergy Systems	135	1,590	26.90	96	Razer	125	1,500	10.42
71	Actifio	208	1,100	25.94	97	Datto	100	1,000	10.00
72	Docker	179	1,000	25.55					

Opportunities

The Narwhal List suggests that Canada has the potential to grow several Unicorns in the near future. Two Canadian Narwhals Hootsuite and Kik Interactive are already Unicorns. Bluerock Therapeutics and DalCor Pharmaceuticals are the closest contenders for the Unicorn Club, but we estimate that, depending on valuation, they would need to raise another \$50 million each to reach that level.

If you look at the lowest-ranked Unicorns in Table 5, you will note that there are 25 US Unicorns with a Financial Velocity of \$10–25 million per year. There are 10 Narwhals in Canada with a Financial Velocity in that range: Turnstone Biologics, ILKOS Therapeutics, Real Matters, Clementia Pharmaceuticals, Wealthsimple, Northern Biologics, Lendified, Lightspeed POS, Zymeworks, and HLS Therapeutics.

But while these Canadian firms have raised, on average, \$107 million per company, American Unicorns have accumulated nearly double that amount (\$200 million per firm) in the same timespan. Based on these numbers, one can argue that to turn ten Narwhals into Unicorns, they must each raise another \$100 million at valuations that would qualify them for entry into the Unicorn club.

We must note, however, that the Narwhal List ranks companies according to a specific set of metrics, which define “potential” as the ability to attract capital quickly. Extensive empirical evidence and global trends suggest that some of the world’s most well-known technology businesses (e.g., Facebook, Uber) have reached global scale by pursuing large and strategic investments, often from venture capitalists. But certainly, there are other high-potential companies that are creating jobs and innovations that bring benefits to society, but with a more modest growth strategy. Growth rates also depend on the nature of technology because products in some industries such as advanced manufacturing and pharmaceuticals require very long development cycles.

But the objective of our Narwhal List is to look at companies that are pursuing a quick and aggressive growth trajectory and VC funds. Although Canadian companies may not be perceived as attractive financial investments (as described in our last report, *A Failure to Scale*, February 2017), the Narwhal List points to an exciting set of Canadian businesses that have the potential to make the entry into the Unicorn Club. The natural step from there would be a leap to public financial markets and continued growth resulting in globally competitive companies.

Methodology

This study looked at the fundraising patterns of 97 private US companies that had been identified as Unicorns before 2017. It also looked at 1,100 private VC-funded Canadian businesses listed on the CB Insights' database as at February 15, 2017. All amounts are stated in US dollars.

The data was only collected from public sources and may therefore be incomplete. And despite our best efforts, we may have omitted a company that belongs on the Narwhal List or may have included one that does not fit. All efforts were made to check the veracity of the data.

Please note that all readers are encouraged to report errors or omissions. If we have made a mistake in reporting your company statistics or have inadvertently left out your company, please contact us and we will be pleased to update the list in a subsequent release.

This study was not intended to be academically rigorous; nor was it intended to be all-encompassing about the topic of Financial Velocity and business potential. It was designed only to add to the conversation on innovation and highlight areas worthy of future research by looking at data available from publicly available sources. We plan to continue exploring and developing research on the subject in future Impact Briefs.

Study Context

Companies often become globally competitive players by going public and accumulating the financial wherewithal to continue a strong growth trend. Fundraising in public markets allows them to generate profits or to raise capital for growth and acquisition. But, before they become public, these companies have to enjoy the support of private investors to fuel growth until they are large enough to go public.

In order to identify private Canadian firms with the potential to continue on a high-growth trajectory and transition to public status, we must have a measure of their success while they are private. This metric must be publicly available and easy to compute.

The US technology market originated the concept of Unicorns, which are defined as private technology companies with a valuation of \$1 billion and above. This database is maintained by the technology intelligence firm CB Insights, which has developed a methodology to analyze, calculate and use valuations of private firms and rank them accordingly. Currently, there are 185 Unicorns from around the world (February 2017).

The "Unicorn Club" provides a global indicator of the largest private companies that are poised for further growth and potentially a leap to public markets.

For a firm to scale to a world-class level, it must grow rapidly. To identify high-potential

firms, we need measures of both size and growth rates. However, while 97 Unicorns are American, only two—Hootsuite and Kik Interactive—are based in Canada. Since this database does not capture large numbers of high-potential Canadian businesses, we cannot rely solely on the Unicorn list.

This report offers a methodology to identify high-potential private Canadian companies from publicly available data. The metrics that we are especially interested in are size and growth rate.

Company Size

Any estimates of the size of a private company must be based on proxy information because, with the exception of VC investments and government funding, all other company data are kept confidential. To determine a publicly available proxy for the size of private companies, we first looked at data related to revenue and capital available for a large set of public companies. We accumulated, in the process, information on 1,246 technology firms currently listed on the New York and NASDAQ exchanges.

Our analysis of various industries showed a direct correlation between annual revenue a company makes and the amount of capital it requires to reach those earnings (Table 6). In fact, the average correlation coefficient is 0.92 over a wide range of industries. Certainly, the old adage that it takes money to make money seems to hold true across sectors.

Analysis of Revenue and Capital for 1,246 technology companies listed on the New York and NASDAQ exchanges

Table 6

Industry	Number of Companies	Average Revenue (USD)	Average Capital (USD)	Ratio of Capital to Revenue	Correlation of Capital with Revenue
Biotech	172	961,182	1,835,668	1.91	0.92
Chemicals	95	5,229,304	5,128,908	0.98	0.86
Equipment	109	6,247,308	6,010,060	0.96	0.96
Instruments	92	1,001,922	1,304,001	1.30	0.94
Pharma	336	2,160,807	3,489,589	1.61	0.86
Semiconductor	109	31,482,571	49,742,872	1.58	0.99
Services	159	4,771,155	6,244,870	1.31	1.00
Software	174	8,515,815	9,035,739	1.06	0.82
	1,246	7,546,258	10,348,963	1.37	0.92

An in-depth analysis of these results showed that in some industries, such as pharma and biotech, larger amounts of capital are required at earlier stages of development. Furthermore, a firm's capital funding precedes growth rather than lagging it. The funding is also secured in a stepwise fashion at specific points in a year rather than continuously. Thus capital funding is a better measure of the size potential of a company than the actual size of the company.

Growth Rates

Investors reward business growth. The greater the growth rate of a firm, the more likely it is to attract investors' interest because higher growth improves the internal rate of return on an investment. Moreover, the higher the growth, the more capital a company needs and the faster it needs it. Given this trend, we looked at the pattern of consumption of capital by firms as a proxy for growth rate, and particularly the average amount of money raised by a firm annually since its inception. This is effectively a measure of Financial Velocity. Table 5 lists the Financial Velocity of the leading US-based Unicorns.

Uber, which leads the group, has raised \$12.5 billion since its founding in 2009. Thus, the average amount raised per year of its existence, or its so-called Financial Velocity, is \$1,562 million per year.

We used the Unicorn List to test the correlation between amounts raised and financial velocities as well as valuations and financial velocities.

When all American firms are taken into account, the correlation between secured capital and Financial Velocity is 0.95. When the data for the top three firms (Uber, Airbnb, Snapchat) are excluded, the correlation falls to a respectable 0.71.

The relationship between valuation and Financial Velocity is slightly weaker: the correlation coefficients are 0.95 and 0.45 with and without the top three Unicorns, respectively.

This analysis allowed us to conclude that proxy measures of a firm's size and growth rate can be derived from public data.

About the Impact Centre

Science to Society

We believe that science is the foundation for a better quality of life. Our vision is to be a place where you can connect with exceptional research, talent, training, innovative companies, and government to create products and services that benefit society.

Advancing Industry Innovation

We leverage the expertise and resources of universities to create real products and solutions for our clients. Our core competencies are in the natural sciences and engineering.

We catalyze university research to create long-term impact for our industry clients. We accelerate research to market!

Enabling Student Startups

The Impact Centre nurtures the creation and growth of student-led startups that are developing innovative products and services rooted in the natural sciences and engineering.

We provide training to help graduate students, recent graduates, and researchers transform their discoveries into real products and services that benefit society.

Training Innovators and Entrepreneurs

The Impact Centre offers research and industry-relevant training for professionals and students at all levels. We deliver speeches, workshops, undergraduate courses, and coordinate internship placements.

Our initiatives help professionals, undergraduate students, graduate students and postdoctoral fellows develop career skills to enable them to be successful innovators and leaders.

Studying Innovation

The Impact Centre explores questions at the intersection of science, business, policy, and society. We conduct research on all aspects of innovation, from ideation and commercialization to government policy and broader themes such as the connection between science and international development.

We study how companies of all sizes navigate the complex path between a discovery and the market and how their collective innovations add up to create a larger socioeconomic impact.

Charles Plant
Author
Senior Fellow
cplant@imc.utoronto.ca
416-458-4850
@cplant

Emina Veletanlic
Editor
Manager, Strategic Initiatives
eveletanlic@imc.utoronto.ca
416-978-1457

Contributors:
James Li
Leo Mui
Scott McAuley
Taylor Wilkes



UNIVERSITY OF
TORONTO

Impact Centre
Suite 411 - 112 College Street
Toronto, Ontario
Canada M5G 1L6

Tel: 416-978-3875
info@imc.utoronto.ca
www.impactcentre.utoronto.ca