

EXECUTIVE SUMMARY

BIBLIOMETRIC ANALYSIS ON GENOMICS RESEARCH IN BRITISH COLUMBIA

BACKGROUND

Genome British Columbia (Genome BC) commissioned Science-Metrix to measure the impact of British Columbia's (BC) research in genomics, benchmarking BC against the performance of the other Canadian provinces, Canada as a whole and globally. Recent publications were also analyzed in seven sub-areas of genomics aligned with Genome BC's strategic areas: Health, Forestry, Agriculture, Fisheries, Environment, Mining, and Energy.

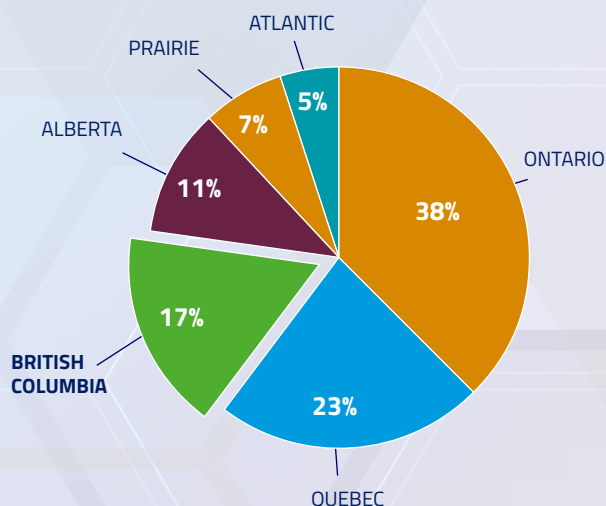
The report uses bibliometric measures as a lens through which to analyze the performance of BC in genomics research, assessing this performance along several dimensions: the volume of research publications produced, the citation impact of those publications and the patterns of co-authorship. While the focus of the study is on the 2010–2017 period, longer-term trends extending back to 1980 are also assessed, to give perspective on the more recent trends.

GENOMICS RESEARCH OUTPUT

Genomics as a research topic has grown enormously over recent decades, increasing from about 12,500 papers annually worldwide in the early 1980s to over 100,000 papers in the most recent years. Canada has participated in about 4.5% of all genomics research articles since the mid-1990s, a level that it has sustained despite a vast increase in output at the global level.

BC's share of Canadian genomics research output increased notably in the late 1980s, reaching about 17%, a level it has consistently maintained since 2010.

CANADA'S GENOMICS RESEARCH OUTPUT BY PROVINCE (2010–2016)

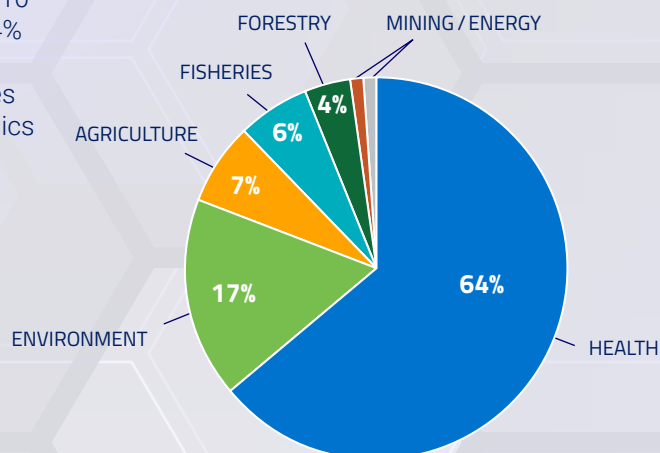


SPECIALIZATION IN SUB AREAS* OF GENOMICS

BC produced about 7,000 papers in genomics overall from 2010 to 2016. The largest output was in health genomics (about 64% of the total) and environmental genomics (17%), while agricultural genomics accounted for 500 papers (7%), fisheries genomics accounted for a further 420 (6%) and forest genomics accounted for about 300 (4%). Energy genomics and mining genomics accounted for fewer than 40 papers each over the 2010–2016 period, less than 1% of BC's total output.

*The sub areas of genomics include key economic sectors such as health, forestry, fisheries and aquaculture, agriculture, mining, energy and environment.

BC'S GENOMICS RESEARCH OUTPUT BY SECTOR (2010–2016)



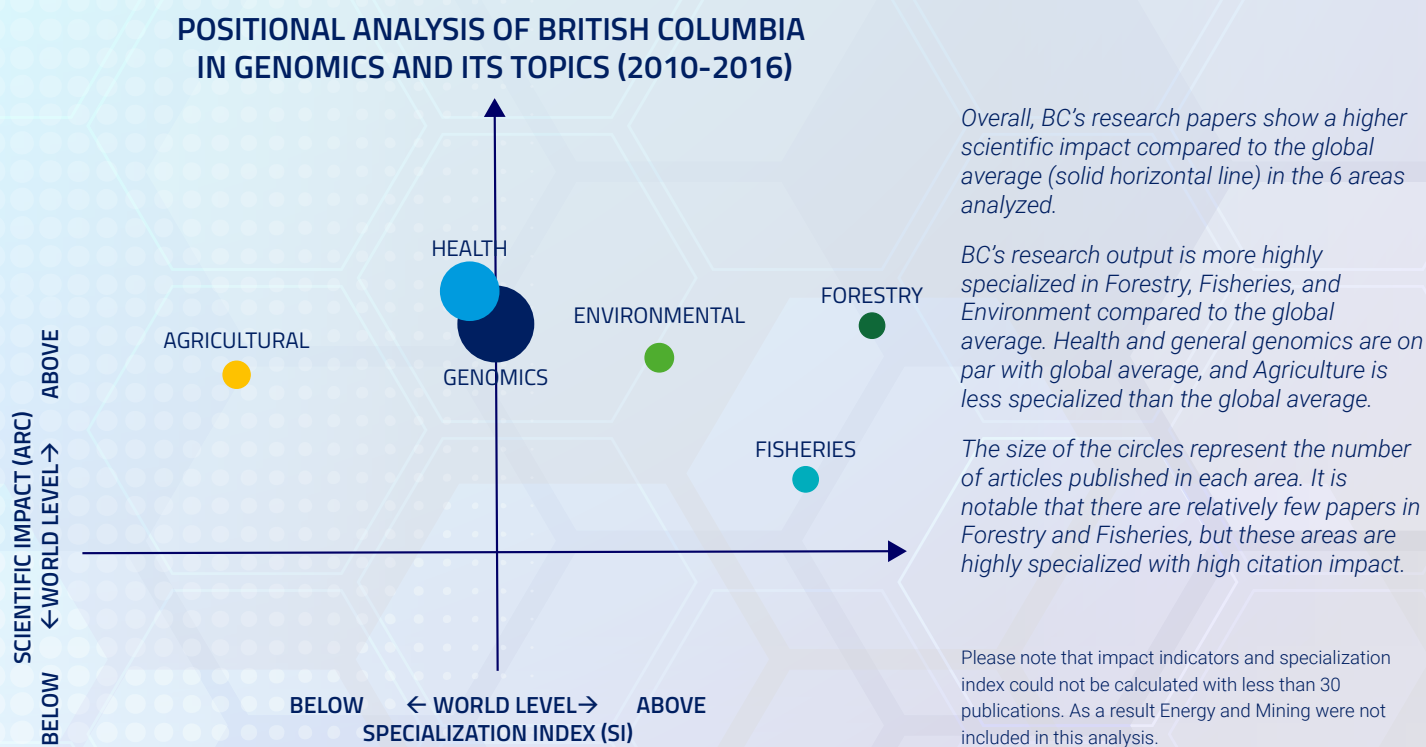
CITATION IMPACT

BC's research papers in genomics were cited about 70% more often than the world average, and about 20% of its papers were among the 10% most cited worldwide.

BC had the highest citation rates in genomics of any province in Canada. This finding mirrored the results observed across all research topics, but it is notable that BC's citation impact in genomics was higher than its impact across all topics. Genomics research in BC is very strong compared to both genomics research in other provinces and research on other topics in BC.

BC's research was more cited than the global average in each of the seven sub-areas of genomics.

BC's results were strongest in health genomics (90% more cited than global average, and 20% of papers were in top 10% most cited). Forest genomics (75% more cited, 23% in top 10%) and in environmental genomics (50% more cited, 19% in top 10%). BC was the standout leader in forest genomics, producing 45% of the Canadian total, in a field where Canada is already a global specialist. In terms of citation impact, BC's performance is pronounced as 23% of BC's papers in forest genomics were among the most cited 10% worldwide.



INTERNATIONAL COLLABORATION RATE

BC's rate of international collaboration was the highest of any province, across all research topics and in genomics specifically. Within the sub-areas of genomics, BC's rate of international collaboration was above 60% in each, with fisheries genomics (53%) and mining genomics (40%) the only exceptions. Looking only at the four largest provinces, BC generally had the highest international collaboration rate in each sub-area. The only exception was fisheries genomics, where Quebec's rate was higher.

