

AMBIENT LIGHT AT NIGHT AND BREAST CANCER RISK: A CASE-CONTROL STUDY IN CANADA

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Kingston, Ontario: Traditional Anishinaabe and Haudenosaunee Territory
Pop ~ 124,000



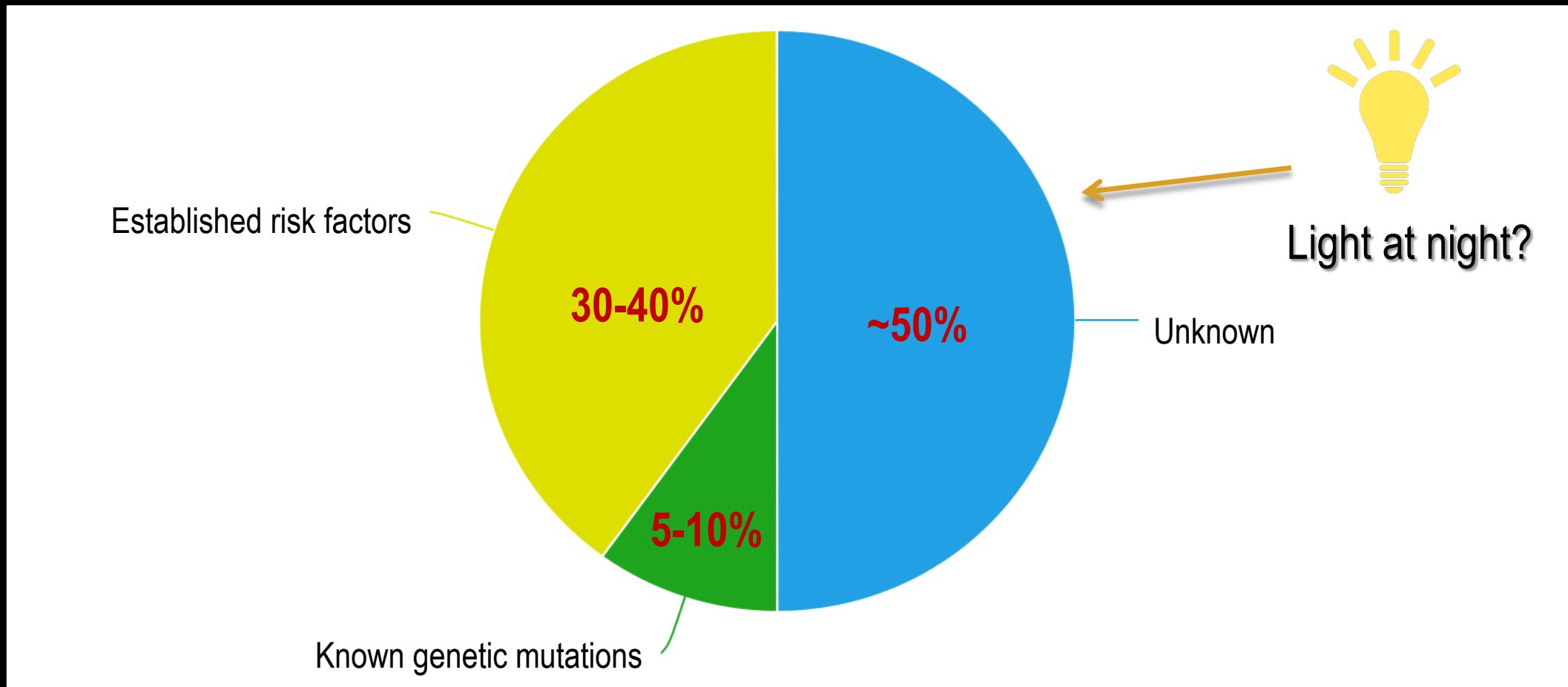
Vancouver, British Columbia: Traditional Musqueam, Squamish and Tsleil-waututh First Nations Territories

Pop ~ 2.4mill



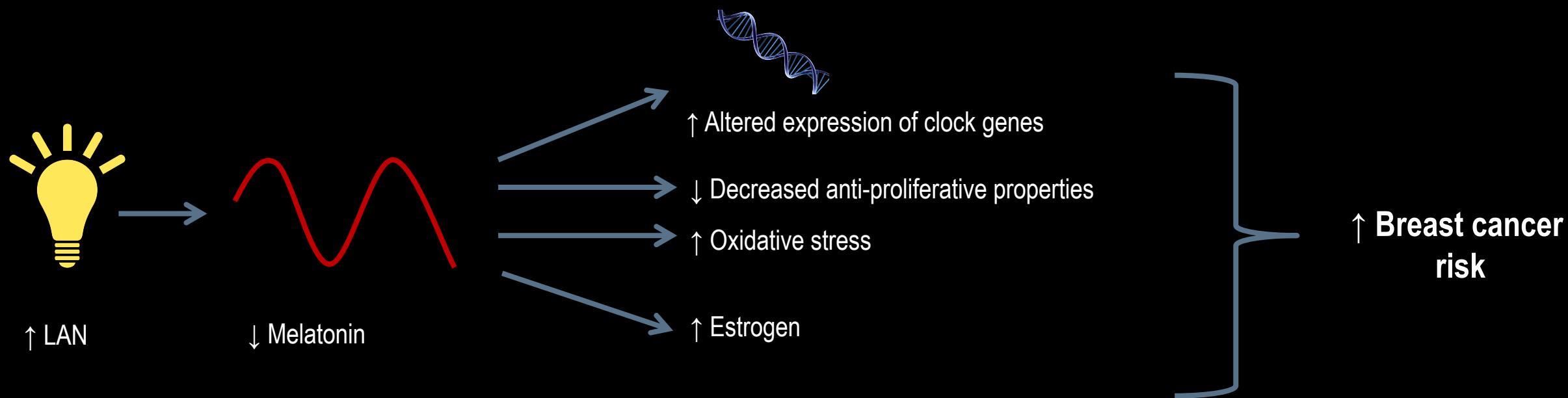
Background

- Breast cancer → most frequent cancer among women globally



Background

- Light-at-night (LAN) theory proposed by Richard G. Stevens in 1987¹



1. Stevens RG. Electric power use and breast cancer: a hypothesis, *Am J Epidemiol*, 1987, vol. 125 (pg. 556-61)

Background

- Limitations of studies looking at LAN and breast cancer risk
 - Self-reported exposure
 - Ecological designs – many possible confounders
 - Lower resolution LAN data
 - Exposure measurements at one time point
- Need for research that combines individual level data with comprehensive measures of LAN
- Hypothesis that higher resolution LAN would show stronger associations with cancer risk

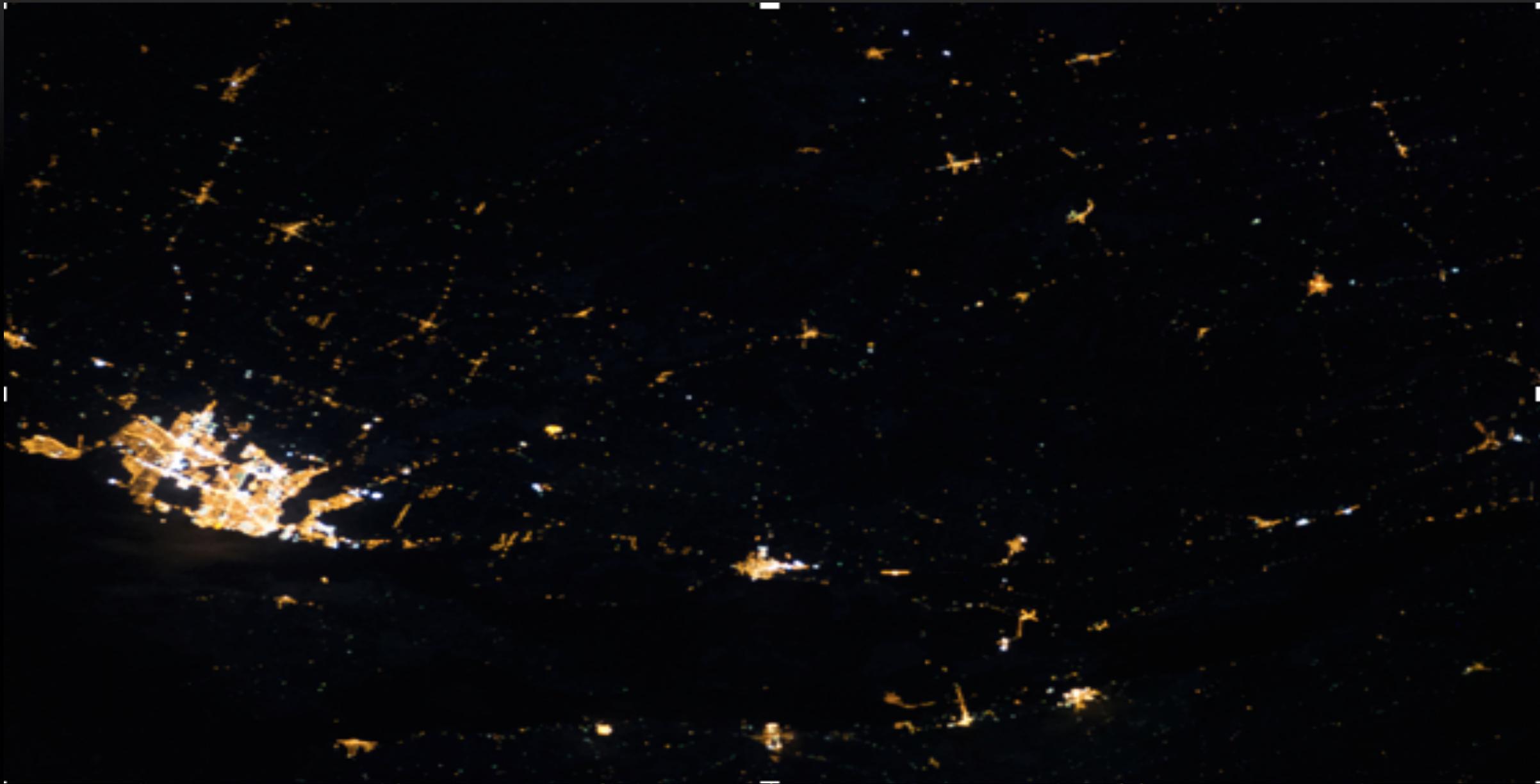
Vancouver, BC – taken on March 31, 2013

49.2827° N, 123.1207° W



Kingston, ON – taken on Jan 22, 2013

44.2312° N, 76.4860° W



Methods: LAN Sources

- Outdoor LAN derived from 3 sources, estimated for each residence:
 - 1) Satellite imagery from the International Space Station (ISS) in 2013
 - ~10m resolution
 - 2) Visible Infrared Radiometer Suite Day-Night Band data (DNB) in 2012
 - ~750m resolution
 - 3) U.S. Defense Meteorological Satellite Program (DMSP) imagery data in 2010
 - ~5-7km resolution