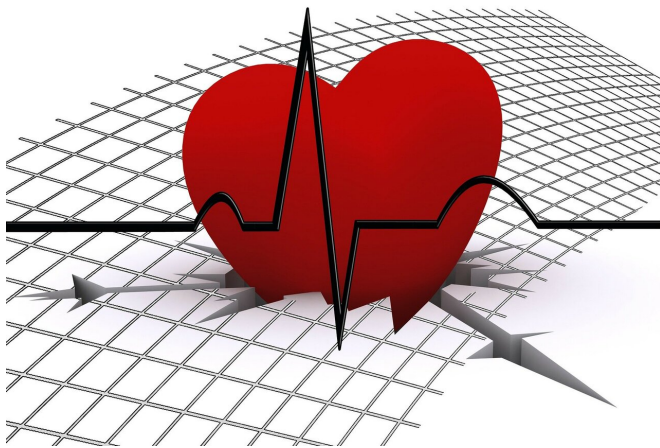


With a heavy heart: How men and women develop heart disease differently

17 April 2020, by Frederique Mazerolle



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A new study by researchers from McGill University has uncovered that minerals causing aortic heart valve blockage in men and women are different, a discovery that could change how heart disease is diagnosed and treated.

Using the Canadian Light Source (CLS) at the University of Saskatchewan, Marta Cerruti, an Associate Professor in McGill's Department of Materials Engineering, and her team analyzed damaged [heart valves](#) from patients who had undergone transplants.

Their findings, recently published in *Acta Biomaterialia*, show considerable differences in the [mineral](#) deposits found in aortic valves of men and women who suffer from stenosis, a life-threatening heart condition caused by a narrowing of the aortic valve opening.

"What we showed, which was a surprise to us, is that the type of minerals in the heart valves is different between the sexes," said Cerruti. "We

unexpectedly found that the minerals are different in composition and shape, and that they grow slower in women."

Mineral composition analysis performed at the Soft X-Ray Microspectroscopy Beamline, which is housed within the CLS, also determined that a type of mineral deposit was found almost exclusively in samples from female patients.

Taking diversity into consideration

Cerruti says that her findings demonstrate the importance of thinking about diversity in the context of research, a concept that has historically been a blind spot for the scientific community. For example, using only [male mice](#) in experiments used to be a standard practice.

"Our study is the perfect illustration that by only looking at a specific population, you will skew your data," she says. "Having a more diverse data set improves your science."

Heart disease remains the global leading cause of death in both men and women. With 280,000 heart valves being replaced every year in Canada due to stenosis, Cerruti says her work demonstrates the need to develop different diagnostic and therapeutic approaches when treating aortic stenosis in men or women.

In order to make that happen, Cerruti's group will return to the CLS to further investigate this cardiovascular phenomenon and understand the precise composition of the [mineral deposits](#) they found in women.

"Understanding what the minerals are could definitely help to develop a cure," she says. "It's possible that there could be easier ways to target these minerals and dissolve them for women."

"Differences in mineral composition and

morphology between men and women in aortic valve calcification," by Marta Cerruti et al., was published in *Acta Biomaterialia*.

More information: Ophélie Gourgas et al. Differences in mineral composition and morphology between men and women in aortic valve calcification, *Acta Biomaterialia* (2020). DOI: [10.1016/j.actbio.2020.02.030](https://doi.org/10.1016/j.actbio.2020.02.030)

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