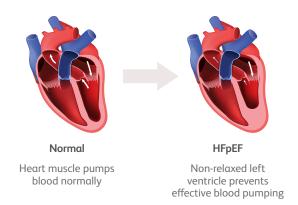
# PRO-C6 as a Heart Failure with Preserved Ejection Fraction (HFpEF) Biomarker

## What is HFpEF?

Heart failure is a chronic condition in which the heart muscle is unable to pump enough blood and oxygen for the body to function properly.<sup>1</sup>

There are several different types of heart failure. HFpEF, which comprises about 50 percent of all heart failure cases, is caused when the heart's left ventricle is unable to relax, preventing the heart from properly filling up with blood, resulting in abnormal cardiac functions.<sup>2,3</sup>



HFpEF is associated with a poor prognosis and there are currently no approved therapies, underscoring the need for improved screening measures that will lead to additional treatment options for patients at the highest risk.<sup>4</sup>

Researchers are working to identify HFpEF biomarkers that can assist in diagnosis, monitor disease progression, guide therapy and better characterize the underlying disease pathology.

### HFpEF and Fibrosis

The failure of the left ventricle to relax observed in HFpEF is due in part to fibrosis, the accumulation of a protein called collagen. Collagen comes in multiple forms, one of which is type VI.

During the deposition of collagen, small collagen fragments called propeptides are formed, leaving intertwined strands of mature collagen. The propeptides are released into circulation and have the potential to be useful biomarkers, as they indicate the formation of fibrotic tissue.

# Mature collagen C-terminal pro-collagen PRO-C6 peptide fragments Formation peptides Cleavage site

Pro-collagen processed to mature collagen leads to c-terminal derived propeptides.

PRO-C6 is the propeptide of type VI collagen. Preliminary studies have shown that PRO-C6 may be a useful biomarker for the formation of fibrotic tissue and predictive of negative outcomes in patients with HFpEF.<sup>5</sup>

# Research Implications

PRO-C6 is being investigated as a potential biomarker in patients with heart failure, to determine if it:

- Is a significant predictor of HFpEF disease progression and patient outcomes
- Can be used as part of diagnostic testing to stratify HFpEF patients into risk categories
- Plays a role in heart failure with reduced ejection fraction (HFrEF), hypertrophic cardiomyopathy (HCM) and dilated cardiomyopathy (DCM)

PRO-C6 is one of many biomarkers under investigation at Bristol Myers Squibb.

Learn more about our work in cardiovascular disease by visiting:

https://www.bms.com/researchers-and-partners/areas-of-focus.html

<sup>1.</sup> American Heart Association. "What is Heart Failure?" https://www.heart.org/en/health-topics/heart-failure/what-is-heart-failure. Accessed May 31, 2019.

2. American Heart Association. "Types of Heart Failure." https://www.heart.org/en/health-topics/heart-failure/what-is-heart-failure/types-of-heart-failure. Accessed May 31, 2019.

<sup>3.</sup> Bhuiyan, T. and Maurer, M.S. 2011. "Heart failure with preserved ejection fraction: persistent diagnosis, therapeutic enigma." Current cardiovascular risk reports. 2011; 5(5):440. https://www.ncbi.nlm.nih.gov/p-mc/articles/PMC3211140/.

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