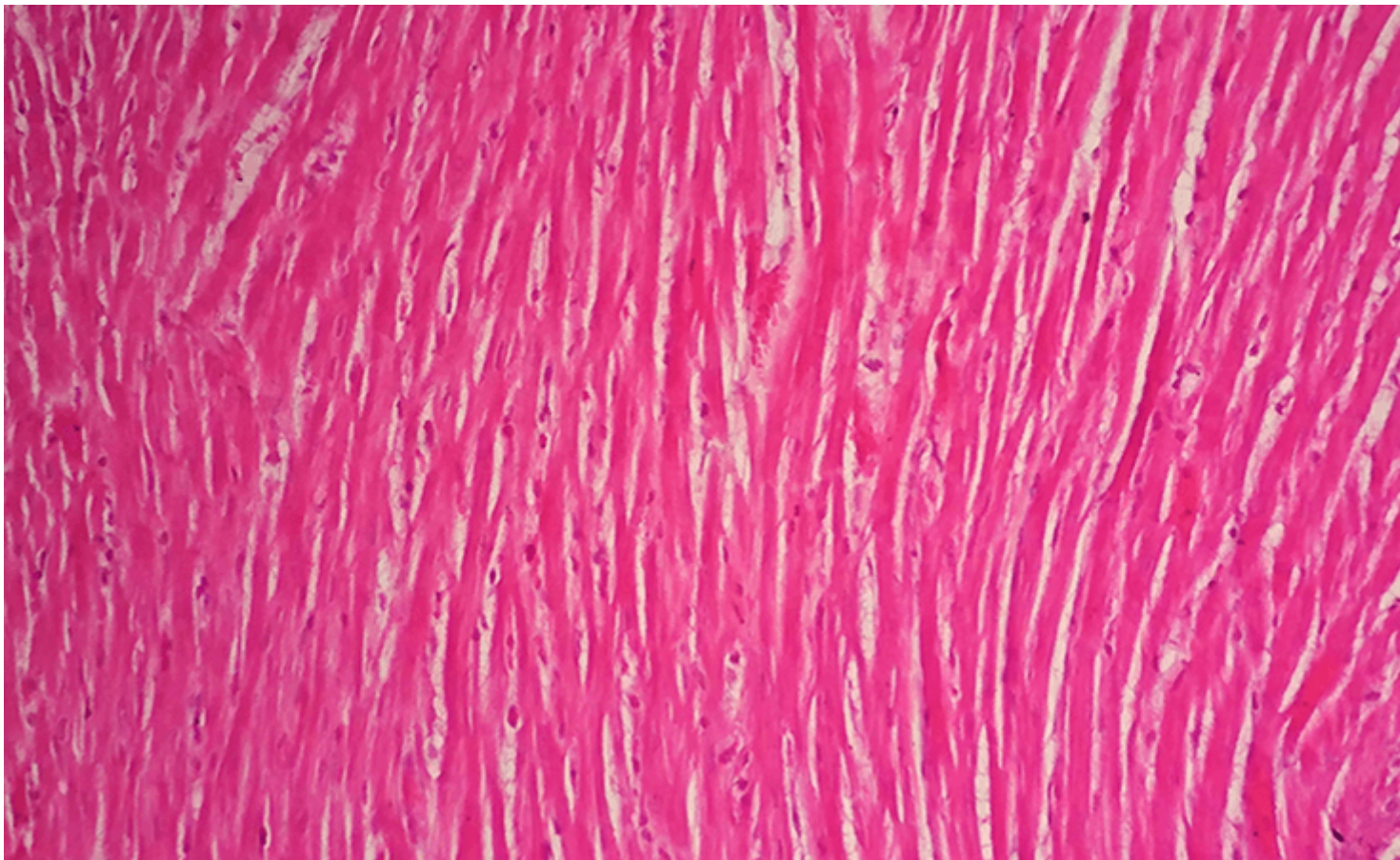


Cardiovascular & Metabolic Diseases ^[1]

Cardiovascular (CV) and metabolic diseases are now the world's top killers, even in developing nations, where they have eclipsed starvation and infectious diseases as the most critical health concerns. Approximately one-third of all deaths globally are attributed to CV disease, and 9% of adults have diabetes.¹

In recent years, the steep rise in these diseases—intimately linked to the global obesity epidemic—has vastly outpaced efforts to develop effective therapies. Our team is committed to reversing this alarming trend by developing potential new therapies based on a deep understanding of disease biology. With recent successes and a pipeline of investigational drugs, we see a renaissance on the horizon for the treatment of CV and metabolic diseases.



Main image: Histology of human cardiac muscle under microscope view by Shutterstock

At the forefront of this renaissance is research into heart failure with reduced ejection fraction, a condition in which the heart struggles to pump blood efficiently, leaving patients fatigued, short of breath and at risk of sudden cardiac death. Although heart failure is a major public health issue², few treatments have been approved for this condition.

But the fight against CV and metabolic diseases would be incomplete without a focus on the main driving force behind these diseases—obesity. Humans evolved at a time when sugar, fat and calories were still scarce, but now they're abundant and inexpensive. Improved dietary habits and exercise routines are important tools in the battle against obesity, yet they're difficult to maintain. Our scientists are designing potential new therapies based on an emerging understanding of the biology behind the problem.

We have several drug candidates to treat obesity in early phases of testing, ranging from compounds thought to block cells from taking up glucose to molecules designed to suppress appetite and others that aim to delay nutrient uptake. Our efforts in this area also aim to reduce cholesterol and triglycerides, thwart damaging reactive oxygen species common in CV and metabolic diseases, and alleviate heart failure with preserved ejection fraction, a condition associated with obesity.

To improve our chances for success, we are pursuing multiple targets for each condition using an array of technologies, including, small molecules, therapeutic antibodies, peptides and proteins. Ultimately, we hope to help stem the rising tide of CV and metabolic diseases around the world.

Footnotes:

1. Global status report on noncommunicable diseases. WHO. 2014
2. Bui AL, Horwich TB, Fonarow GC. Epidemiology and risk profile of heart failure. *Nature reviews Cardiology*. 2011;8(1):30-41. doi:10.1038/nrcardio.2010.165.

Selected Publications:

Small-molecule WNK inhibition regulates cardiovascular and renal function [2]

Yamada K1, Park HM1, Rigel DF1, DiPetrillo K1, Whalen EJ1, Anisowicz A1, Beil M1, Berstler J1, Brocklehurst CE1, Burdick DA1, Caplan SL1, Capparelli MP1, Chen G1, Chen W1, Dale B1, Deng L1, Fu F1, Hamamatsu N1, Harasaki K1, Herr T1, Hoffmann P1, Hu QY1, Huang WJ1, Idamakanti N1, Imase H1, Iwaki Y1, Jain M1, Jeyaseelan J1, Kato M1, Kaushik VK1, Kohls D1, Kunjathoor V1, LaSala D1, Lee J1, Liu J1, Luo Y1, Ma F1, Mo R1, Mowbray S1, Mogi M1, Ossola F1, Pandey P1, Patel SJ1, Raghavan S1, Salem B1, Shanado YH1, Trakshel GM1, Turner G1, Wakai H1, Wang C1, Weldon S1, Wielicki JB1, Xie X1, Xu L1, Yagi YI1, Yasoshima K1, Yin J1, Yowe D1, Zhang JH1, Zheng G1, Monovich L1. *Nat Chem Biol*. 2016 Nov;12(11):896-898. doi: 10.1038/nchembio.2168. Epub 2016 Sep 5.

The DGAT1 inhibitor Pradigastat Decreases Chylomicron Secretion and Prevents Postprandial Triglyceride Elevation in Humans [3]

Meyers CD, Serrano-Wu M, Amer A, Chen J, Rocheford E, Commerford R, Hubbard B, Brousseau M, Li L, Meihui P, Chatelain R, Dardik B. J Clin Lipidol. 2013. 7(3):285.

Genome-wide association mapping of quantitative traits in outbred mice ^[4]

Zhang W, Korstanje R, Thaisz J, Staedtler F, Harttman N, Xu L, Feng M, Yanas L, Yang H, Valdar W, Churchill GA, DiPetrillo K. G3:Genes, Genomics, Genetics. 2012. 2(2):167-174.

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Links

[1] <https://www.novartis.com/our-science/research-disease-areas/cardiovascular-metabolic-diseases>

[2] <https://www.ncbi.nlm.nih.gov/pubmed/?term=whalen+e+wnk>

[3] [http://www.lipidjournal.com/article/S1933-2874\(13\)00154-2/abstract](http://www.lipidjournal.com/article/S1933-2874(13)00154-2/abstract)

[4] <http://www.g3journal.org/content/2/2/167.full>