

Defining novel gene/environment interactions that lead to embryonic heart defects

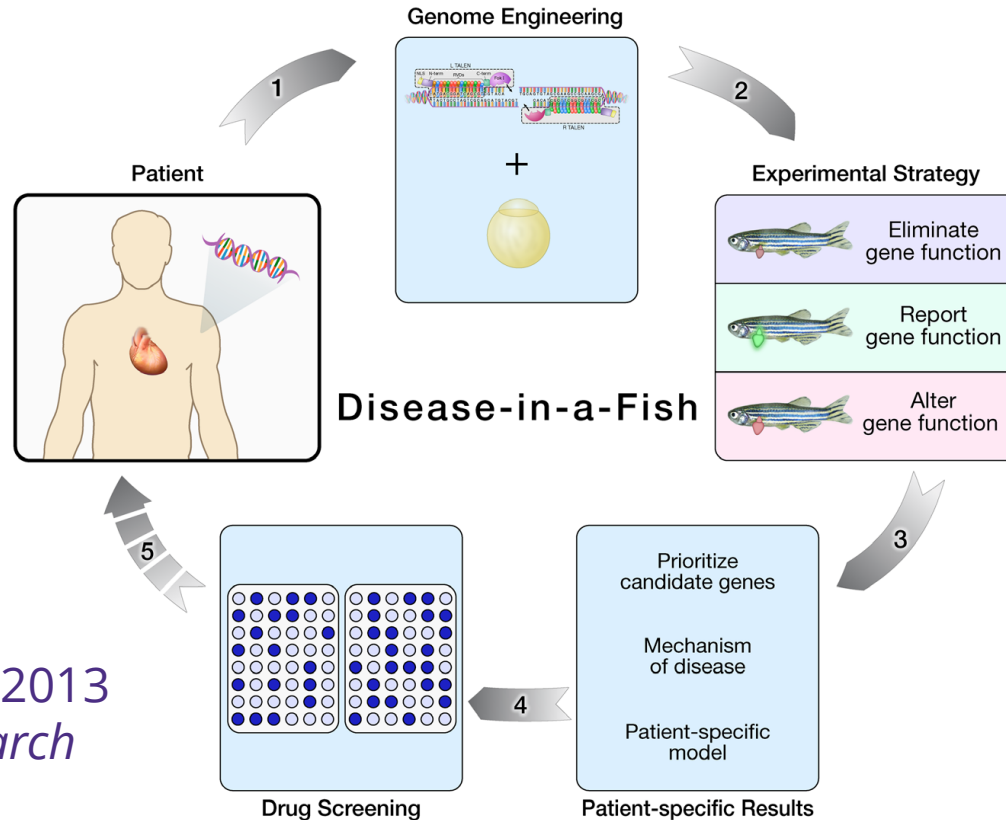
Lisa Maves

Center for Developmental Biology and Regenerative Medicine
Seattle Children's Research Institute

Division of Cardiology
UW Department of Pediatrics

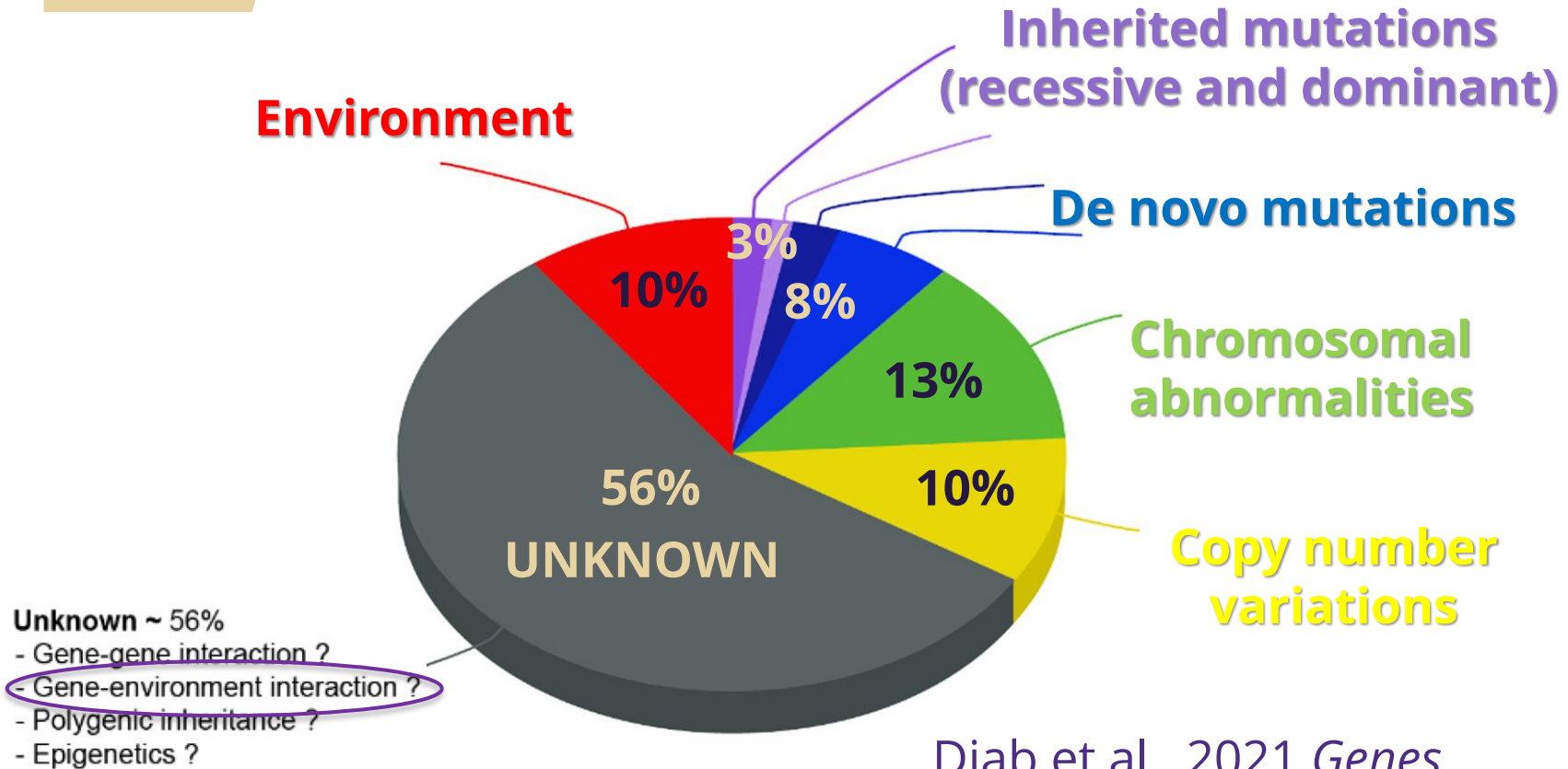


Maves Lab-Zebrafish disease modeling



Campbell et al., 2013
Circulation Research

Causes of congenital heart defects (CHDs)



Diab et al., 2021 *Genes*

Phthalate exposure disrupts embryonic and cardiac development

Research

A Section 508-conformant HTML version of this article is available at <https://doi.org/10.1289/EHP8973>.

A Comprehensive Assessment of Associations between Prenatal Phthalate Exposure and the Placental Transcriptomic Landscape

Alison G. Paquette,^{1,2} James MacDonald,² Samantha Lapehn,¹ Theo Bammler,² Laken Kruger,³ Drew B. Day,¹ Nathan D. Price,^{4,5} Christine Loftus,² Kurunthachalam Kannan,⁶ Carmen Marsit,⁷ W. Alex Mason,⁸ Nicole R. Bush,⁹ Kaja Z. LeWinn,⁹ Daniel A. Enquobahrie,² Bhagwat Prasad,³ Catherine J. Karr,² and Sheela Sathyanarayana, on behalf of program collaborators for Environmental influences on Child Health Outcomes*

Toxicology and Industrial Health

Toxicology and Industrial Health
2021, Vol. 37(7) 391–397
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DOI: 10.1177/07482337211019184
journals.sagepub.com/home/tih


Article

Di-2-ethylhexyl phthalate induces heart looping disorders during zebrafish development

Yangyong Sun¹, Fan Yang¹, Yang Liu^{1,2}, Manli Yu³, Feng Wu^{3,4} and Guokun Wang¹

Archives of Toxicology (2023) 97:831–847
<https://doi.org/10.1007/s00204-023-03444-0>

REPRODUCTIVE TOXICOLOGY

Mono(2-ethylhexyl) phthalate induces transcriptomic changes in placental cells based on concentration, fetal sex, and trophoblast cell type

Samantha Lapehn¹ · Scott Houghtaling¹ · Kylia Ahuna² · Leena Kadam² · James W. MacDonald³ · Theo K. Bammler³ · Kaja Z. LeWinn⁵ · Leslie Myatt² · Sheela Sathyanarayana^{4,6} · Alison G. Paquette^{1,4}



Contents lists available at ScienceDirect

Environmental Pollution

journal homepage: www.elsevier.com/locate/envpol

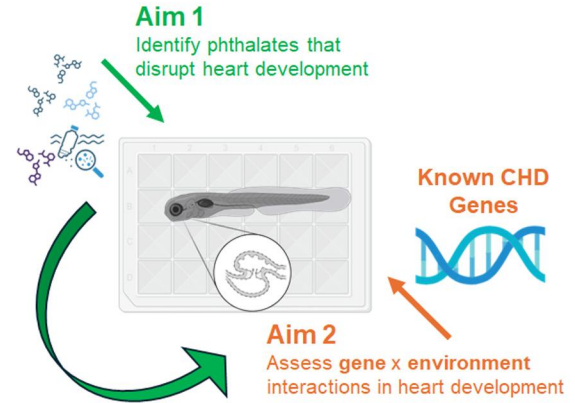
A multi-omics approach reveals molecular mechanisms by which phthalates induce cardiac defects in zebrafish (*Danio rerio*)[☆]

...an^a, Donghui Wang^c, Le Qian^b, Yu Qian^a,
...ngren Li^a, Xiangming Lin^{a, **}



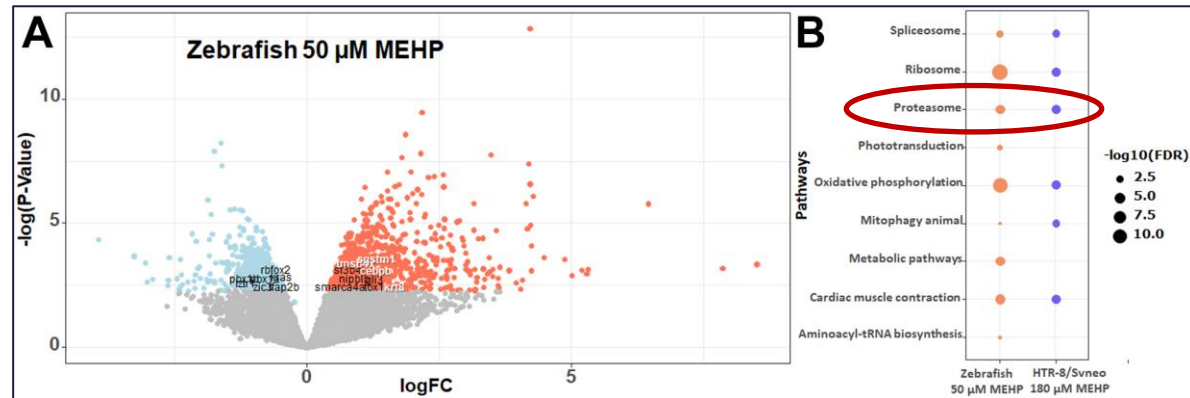
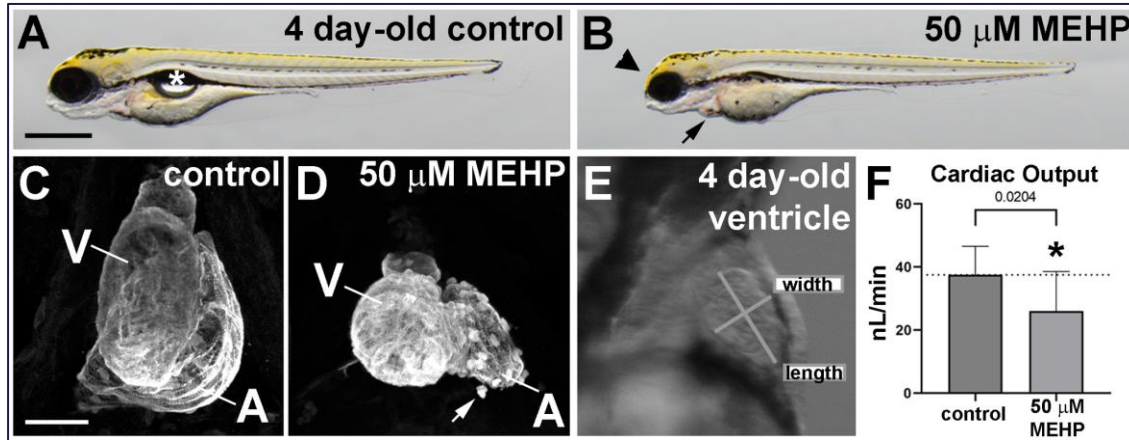
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Pilot project Aims



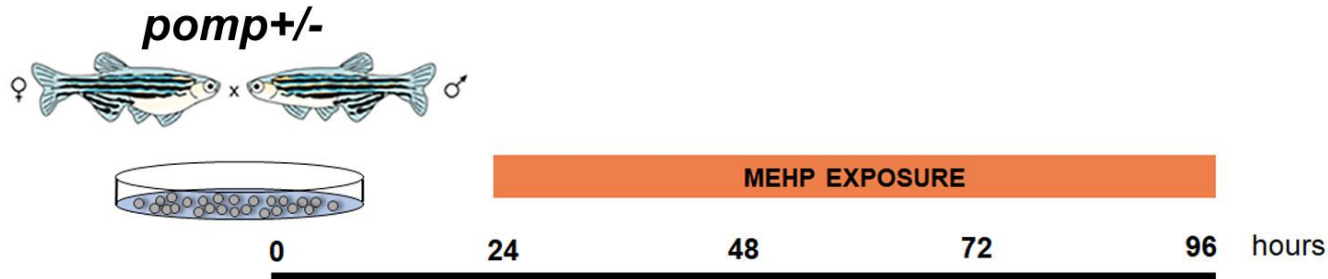
- > **Aim 1: Identify phthalates, phthalate replacements, and their metabolites that disrupt heart development.**
- > **Aim 2: Test whether phthalate exposure interacts with CHD gene mutations in heart development.**

MEHP induces cardiac and transcriptomic changes in zebrafish embryos



Testing MEHP-proteasome gene interactions

- > Hypothesis: mutations in CHD genes mis-regulated by phthalate exposures will make embryos more susceptible to phthalates



Results so far: no obvious evidence for *pomp*/MEHP interactions (yet)

Thank you!

- > EDGE
- > Paquette Lab
- > Maves Lab: Hank Farr, Eva Hasegawa

