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### Title:

### Research emphasis:

The Cowley lab is interested in determining how environmental exposures during early life can affect health and disease susceptibility in adulthood.

Our focus is on understanding the role that epigenetic mechanisms play in this system.

Our broad research questions are:

1. How does the environment we are exposed to in early life modulate our epigenome?
2. What are the consequences of environmentally-induced epigenetic changes for development and adult metabolism?
3. What are the molecular mechanisms governing transgenerational responses to the environment?

### Selected publications: (limit 4)

Cowley M, Garfield AS, Madon-Simon M, Charalambous M, Clarkson RW, Smalley MJ, Kendrick H, Isles AR, Parry AJ, Carney S, Oakey RJ, Heisler K, Moorwood K, Wolf JB & Ward A (2014) Developmental programming mediated by complementary roles of imprinted *Grb10* in mother and pup. *PLoS Biol*, 12(2):e1001799

Cowley M, Wood AJ, Böhm S, Schulz R & Oakey RJ (2012) Epigenetic control of alternative mRNA processing at the imprinted *Herc3/Nap115* locus. *Nucleic Acids Res*, 40(18):8917-26.

Cowley M & Oakey RJ (2013) Transposable elements re-wire and fine-tune the transcriptome. *PLoS Genet*, 9(1):e1003234.

Garfield AS, Cowley M, Smith FM, Moorwood K, Stewart-Cox JE, Gilroy K, Baker S, Xia J, Dalley JW, Hurst LD, Wilkinson LS, Isles AR & Ward A (2011) Distinct physiological and behavioural functions for parental alleles of imprinted *Grb10*. *Nature*, 469:534-8.

### Application:

- Mouse
- Embryonic stem cells
- High-throughput sequencing
- Epigenetics

### Collaboration potential:

- Determining the epigenetic effects of environmental exposures