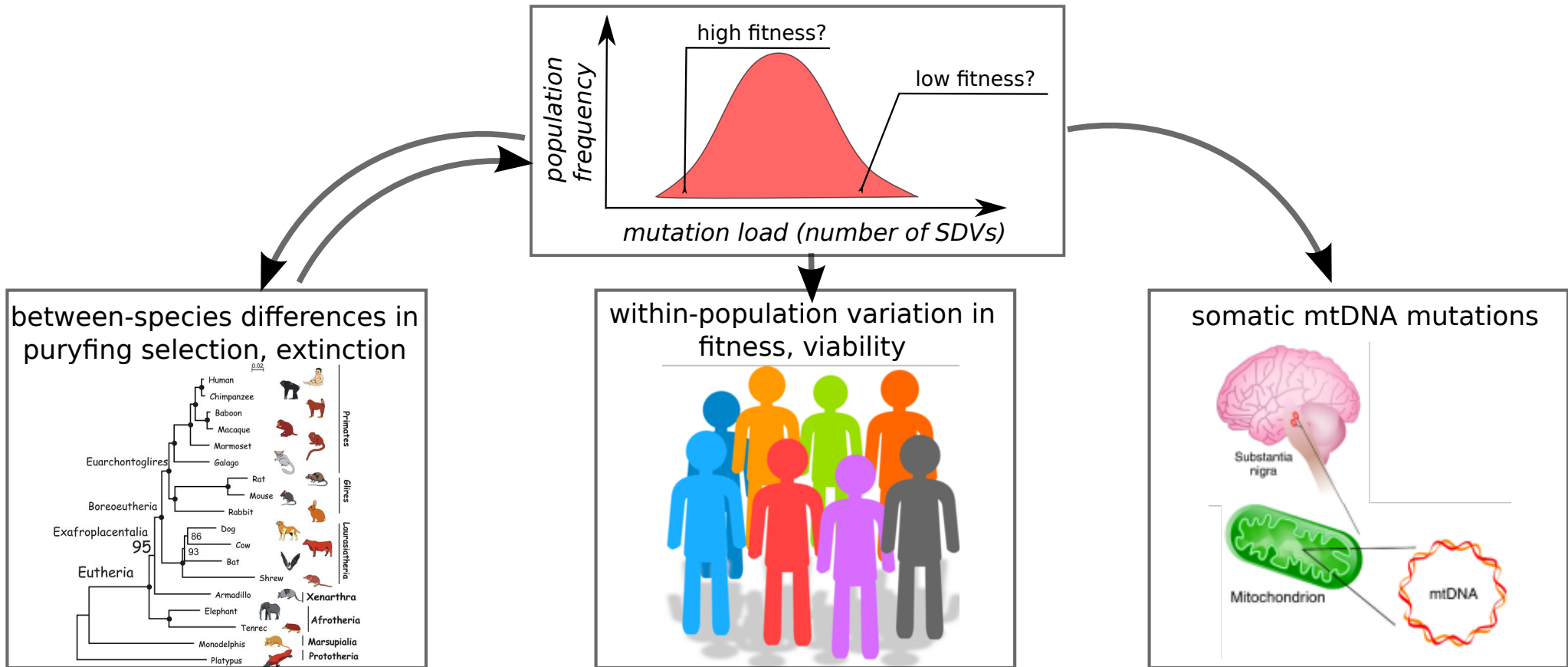


# The load of slightly-deleterious variants (SDVs) and fitness



The rate of fixation of SDVs depends on life-history traits of species:

- Popadin et al. **PNAS** 2007
- Mamirova, Popadin et al. **BMC Evol Biol** 2007
- Nikolaev, Montoya-Burgos, Popadin, **PNAS** 2007
- Popadin\*, Nikolaev\* et al. **MBE** 2103

There is a genetic component of extinction:

- Polishchuk\*, Popadin\* et al. **OIKOS** 2015

Gene expression constraints increase with gene age and shape key traits of molecular evolution:

- Popadin\*, Gutierrez-Arcelus\* et al **AJHG** 2013
- Popadin et al **AJHG** 2014

Whole-genome mutational burden is decreased in live-born Down Syndrome individuals (hypothesis of genetic handicap):

- Popadin et al **Genome Research** 2018

mtDNA somatic deletions affect human lifespan:

- Popadin, Bazykin. **Nature Prec** 2008
- Guo\*, Popadin\* et al. **TIG** 2010
- Popadin et al. **Aging Cell** 2014
- Popadin et al. **AJP** 2014
- Mikhailova et al. **BioRxiv** 2019

mtDNA mutational spectra is sensitive to cell longevity:

- Mikhailova et al. **BioRxiv** 2019