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Human sperm phenotypic screening to discover non-hormonal female contraceptives

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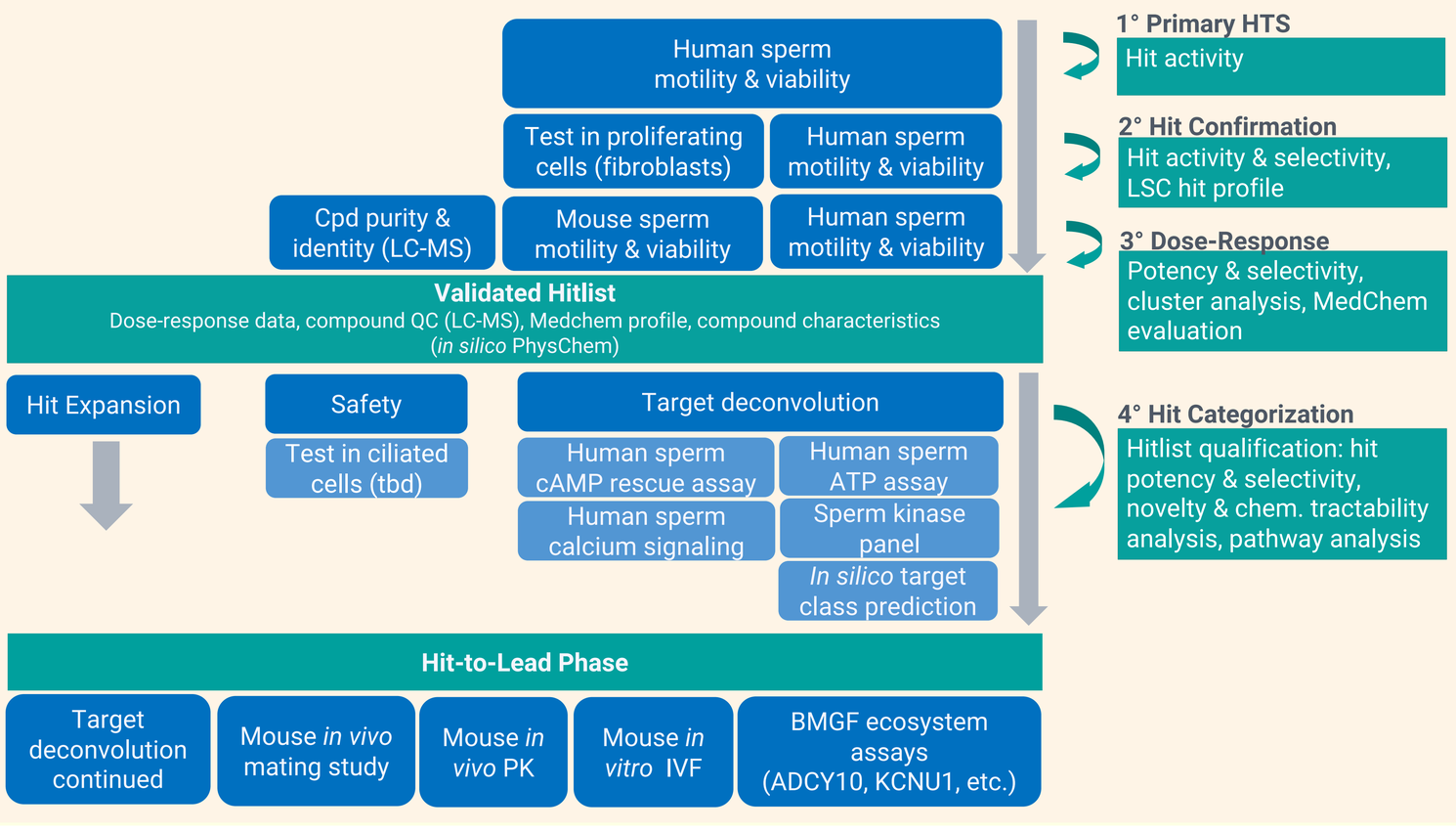
With the aim of identifying compounds with female contraceptive activity, a high-throughput human sperm phenotypic screening platform is being implemented. A compound library of lead-like small molecules will be screened using an assay based on human sperm motility and viability. Selected hits will be explored via a thorough screening cascade intended to end up in target deconvolution.

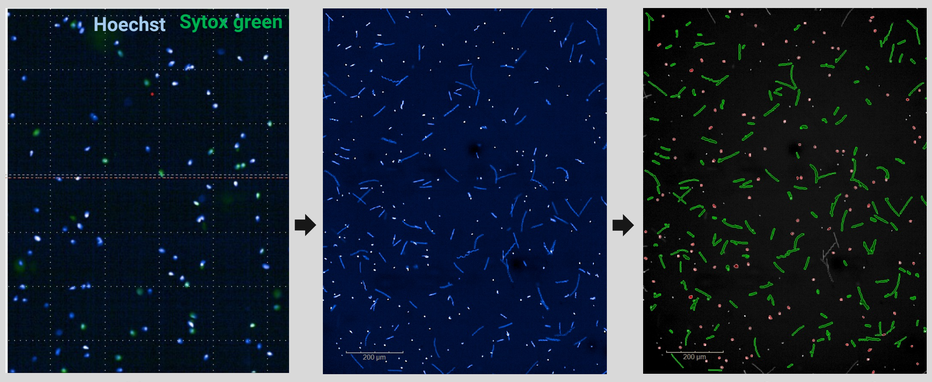
Phenotypic Screening Tree



NUVISAN Explorer high-throughput screening library

- 340 K well-annotated commercial compounds
- High chemical diversity
- Predominantly lead-like compounds

Primary assay: human sperm motility and viability imaging



Staining of human sperm with Hoechst and Sytox green to differentiate live (blue heads) and dead (green heads) cells

1 s exposure picture allows sperm motility tracking

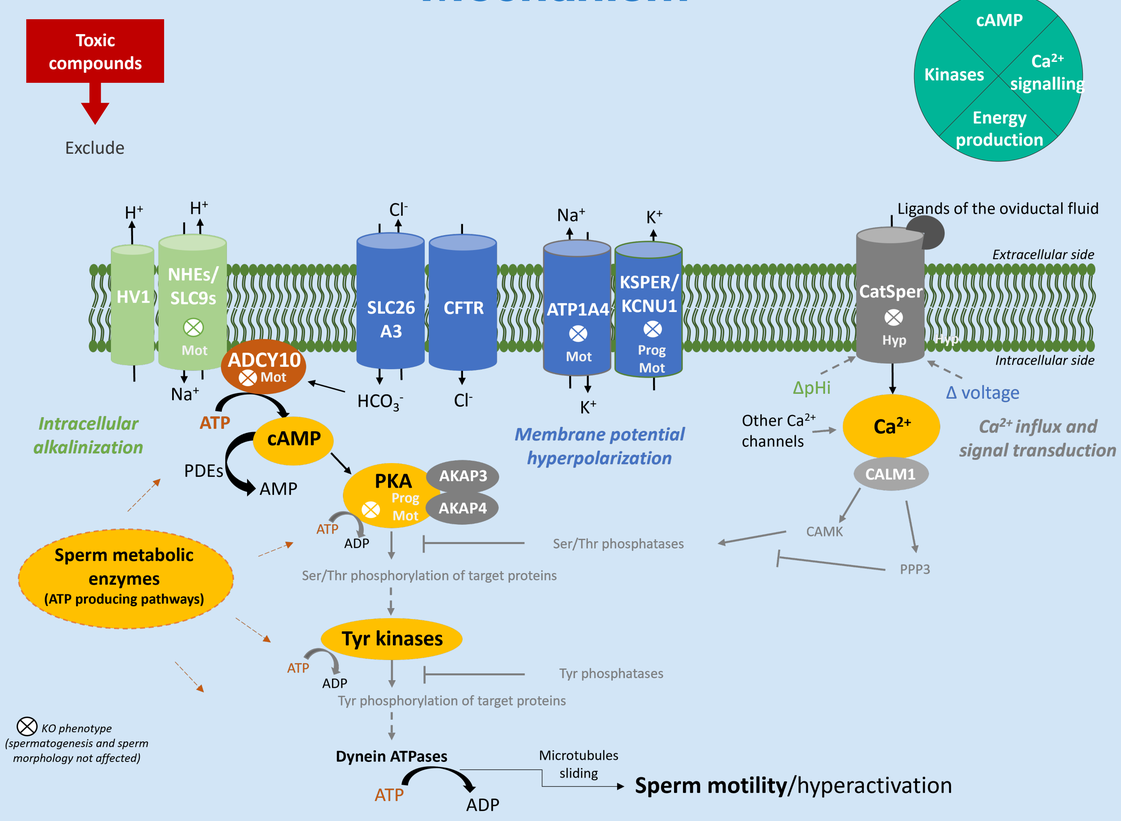
Identification of sperm tracks and artifacts removal

Determination of % live sperm, % motile sperm, and sperm speed

Compounds in 1536 well-plates

Hits should decrease sperm motility/velocity without affecting viability

From Phenotypic Screen to Compound Mechanism



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