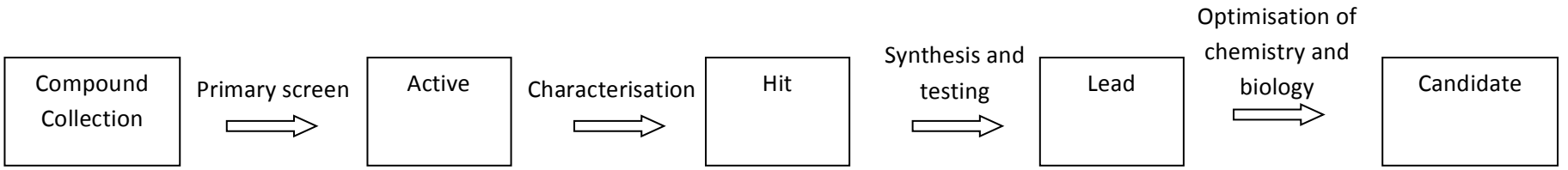
Project Progression Cascade



Target Criteria for each Project Phase

	Active	Hit	Lead	Final Product
Potency	Ca. 0.1x permethrin	Confirmed to be greater than 0.1 x permethrin on S Strain.	1. Potency confirmed to be similar to or greater than permethrin on S strain, *Anopheles gambiae* and *A. arabiensis* 2. A.I. Cost-efficacy estimated to be within 5-fold of permethrin.	Cost-efficacy at least equivalent to permethrin.
Cross-resistance	Unknown	An assessment made from all available data	No more 10 fold cross-resistance seen with the following resistant strains:Kdr, Mace, Rdl, Metabolism (oxidative; esterase;GST)	As for Lead
Spectrum	Active against adult stage of a single mosquito spp	As for Active but species used will usually be *Aedes aegypti* or an *Anopheles* spp.	1. Effective against *Anopheles gambiae* and *A. arabiensis* spp. 2. Effective against other mosquito spp	As for Lead
Speed of Effect	Unknown	Lethal effect seen within 72h of insect exposure to a treated surface for 30 minutes (IRS) and up to 20 minutes (ITNs) exposure	As for Hit	As for Hit.

	Active	Hit	Lead	Final Product
IRS and ITN Fit	Unknown	Contact kill demonstrated on an inert surface.	As for Hit. Hydrolytic and Photo stability	IRS: Six months residual efficacy of formulated AI demonstrated on IVCC standard surfaces (cement, wood, mud). ITN: Five years predicted efficacy on a net in normal use including washing.
Patent Status	Unknown	Freedom to operate issues understood, and potential paths to resolution identified if necessary	Preliminary patent scope identified; freedom to operate issues are understood, and are likely to be resolved.	Freedom to operate for the a.i. and production process must be available. Minimum requirement for end use and/or application patents. AI and process patents whilst desirable are not essential
Exploitable Chemistry	Unknown	Integrity, purity, stability of sample verified	Multiple examples of potency within series; indication of an SAR; viable synthetic routes to multiple analogs	NA
Human Safety/Toxicology	Unknown	No obvious tox alerts are apparent upon expert inspection of chemical structure.	No alerts from preliminary acute oral rodent toxicity screen at 50 mg/kg for AI Ames negative	1. Acute oral toxicity >50 mg/kg, acute dermal toxicity >50 mg/kg (no worse than WHO class II) 2. No GHS categories 1a or 1b for Carcinogenicity, Mutagenicity or Reprotoxicity. No risk of endocrine disruption. 3. Desirable: No neuropathology Low dermal penetration
Environmental Safety	Unknown	Unknown	If Log Kow > 4 biodegredation tests required	The compound must pass the WHOPES environmental risk assessment. Hazard criteria which may trigger higher tier assessment include:

	Active	Hit	Lead	Final Product
				96 hour LC 50 (fish, algae) & 48 EC50 (daphnia) >1 mg/l Non bio-accumulating: log Kow <3, Bio-concentration Factor <2000, unless chronic NOEL > 1 mg/l
Cost of Goods	Unknown	No obvious CoG issues based upon complexity of chemical structure.	As for hit	Length of synthesis deemed to be commercially viable; no prohibitively expensive raw materials. Cost-efficacy calculated to be at least equivalent to permethrin
Crop Value	Unknown	Existing information regarding non vector pest activity has been reviewed.	Spectrum of activity against non vector pests has been investigated.	Spectrum of commercially useful activity against non vector pests established as part of the development case
User Acceptability	Unknown	Unknown	Unknown	1. No classification for irritancy or skin sensitisation 2. No unacceptable odour 1 day after treatment 3.No staining 4.

Relative potencies of standards

Insecticide	Relative Potency
DDT	1
Bendiocarb	1
Permethrin	10

Cypermethrin	20
Bifenthrin	20
Lambda-cyhalothrin	100
Deltamethrin	200