



invenesis
A BIOSCIENCE COMPANY

2026 CATALOGUE

Functional biology across targets and organisms

Phenotypic assays · Electrophysiology · Parasites & vectors



From biology to decisions

Invenesis enables confident go / no-go decisions by measuring **functional biological activity** from isolated targets to whole organisms.

We help R&D teams identify, prioritize, and de-risk active compounds by generating biologically relevant evidence early, before costly downstream investment.

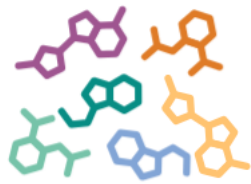
Our integrated platforms offer:

- Phenotypic organism-based assays
- High-value functional electrophysiology

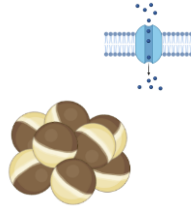
This dual approach allows us to capture target engagement, bioavailability, metabolism, resistance, and system-level effects in a single decision framework.



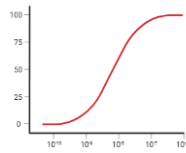
Drug library



Primary testing (1 dose)



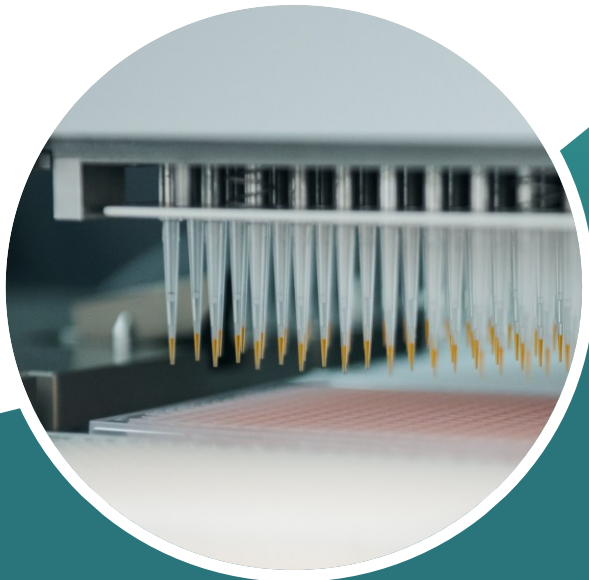
Secondary screening (hit validation)



Toxicology

Resistance
profiling

Lead optimization



Phenotypic organism-based assays

Activity without assumptions. Predictive by design.

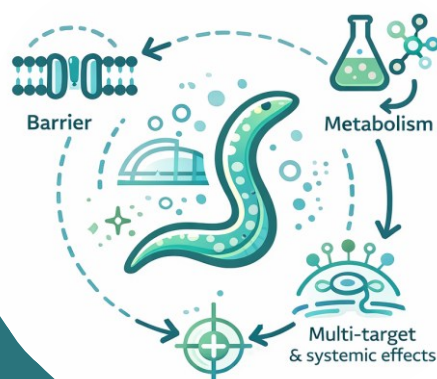
Our organism-based assays measure compound activity at the whole-organism level, independently of predefined molecular targets.

This approach focuses on:

- Endoparasitic species
- Ectoparasitic species & vectors
- Model organisms (*C. elegans*, *drosophila*, etc...)

Compounds emerging from our phenotypic assays are biologically filtered and directly relevant for hit validation, lead ranking, and resistance profiling.

See our assay list in page 16/17



Functional electrophysiology

Direct, quantitative target readouts.

Fast & reliable

Using the *Xenopus laevis* oocyte expression system, we provide rapid functional testing of:

- Ligand-gated ion channels
- Voltage-gated ion channels
- GPCRs and transporters

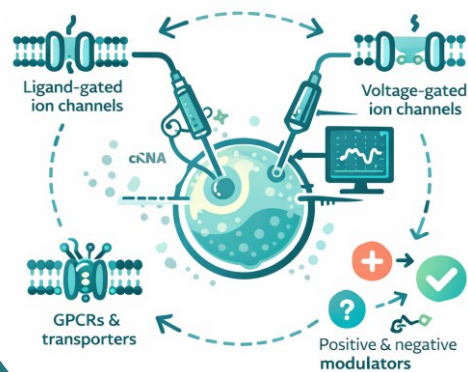
Automated injection and recording workflows allow detection of:

- Agonists & antagonists
- Positive & negative modulators
- Silent agonists

Measurements are completed within days and require limited compound quantities.

See our list of receptors in page 15

See our assay list in page 17



Why Invenesis ?

Most discovery pipelines fail after target validation, when biology becomes complex.

Invenesis operates precisely at this interface:

- Where target activity meets organismal biology
- Where efficacy meets exposure and resistance
- Where early signals become real decisions

Our platform is designed to reduce late-stage attrition by introducing biological reality earlier in the process.



Who it is for ?

Designed for discovery teams who need confidence

Pharma & Biotech

- Early hit validation
- Lead prioritization
- Mode-of-action confirmation
- Resistance profiling

Agro / Animal Health

- Field-relevant efficacy
- Vector and parasite biology
- Repellency and resistance mechanisms

Biotech & Start-ups

- High-value data from limited material
- Partner- and investor-ready datasets

Others



Our assay portfolio

Our assay catalog covers a broad range of organisms, life stages, and biological questions, including:

Ectoparasites & vectors

Endoparasites

Model organisms

Functional targets

More than 40 assays are available and organized by biological question, not by technique — ensuring alignment with R&D decision points.



3 departments at your service

Phenotypic screening

- Organism-based assays
- Fast cycling times for lead optimization
- Synthetic compounds and natural products
- Automated phenotype measurement

Molecular biology & electrophysiology

- Fast expression of ion-channels
- Over 50 ready to use receptors
- Full pharmacological profiling
- Automated process

Custom R&D projects

- Project evaluation/building
- Network of experts available
- Protocol and hardware development



Our locations

Invenesis Switzerland

Headquarters & advanced assay platforms

Ectoparasites and electrophysiology



Invenesis France

Endoparasite expertise & academic ecosystem

Eligibility for « *Crédit d'Impôt Recherche* »



Our teams

Management



Elodie V. Rufener
Co-founder, CFO



Lucien Rufener, PhD
Co-founder, CEO



Thomas Duguet, PhD
CSO



Maxime Alessandri, PhD
CTO

Molecular biol. & electrophysiology



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Laboratory technician



Lea Schepis
*Laboratory technician
Apprentice*



Anouk Sarr
Laboratory technician

Logistics



Yves Desaulles
Laboratory technician

Assays & parasite rearing



Stéphane Wohlhauser
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Invenesis France



Alexandre Vernudachi, PhD
Managing Director

Ectoparasites & Vectors

Species*



- Oral
- Tarsal
- Development
- Sterilization
- Repellency

Cfe



- Oral (*adults, nymphs; with choice*)
- Feeding (*adults; no choice*)
- Tarsal (*larvae, nymphs, adults*)
- Repellency (*larvae, nymphs, adults*)
- Immersion (*adults*)
- Injection (*engorged female*)

Iri

Iri; Rsa; Dva

Iri; Rsa; Dva

Iri; Rsa; Dva

Iri; Rsa; Dva

Iri; Rsa; Dva



- Oral
- Contact
- Development

Lse



- Contact (WHO protocol)
- Repellency (*1 or 2 warm bodies*)

Aae; Aal; Aga



- Contact
- Repellency

Bta



- Immersion

Lsa

* See full list of species in page 14

Ectoparasites & Vectors



- Larval development
- Migration
- Immersion

Species*

Hco; Tco

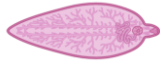
Hco; Tco; Aca; Aga

Hco; Tco; Aca; Tca; Aga



- Immersion (*L1; L3*)

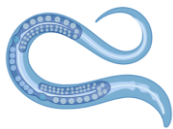
Dim; Avi; Lsi



- Immersion

Fhe

Model organisms



- Larval development
- Migration
- Immersion

Cel



- Development

Dre

Electrophysiology



- Agonist, antagonist,
- PAM/NAM
- IVC

Xla (oocytes)

* See full list of species in page 14

SUPPLEMENTARY INFORMATIONS

Species

Category	Sub-category	Species	Abbreviation
Arthropods	Cat flea*	<i>Ctenocephalides felis</i>	<i>Cfe</i>
	Hard ticks	<i>Ixodes ricinus</i>	<i>Iri</i>
		<i>Rhipicephalus sanguineus</i>	<i>Rsa</i>
	Mosquitoes*	<i>Dermacentor variabilis</i>	<i>Dva</i>
		<i>Aedes aegypti</i>	<i>Aae</i>
		<i>Aedes albopictus</i>	<i>Aal</i>
		<i>Anopheles gambiae</i>	<i>Aga</i>
		Blowflies*	<i>Lucilia sericata</i>
	Whiteflies*	<i>Bemisia tabaci</i>	<i>Bta</i>
	Model fly	<i>Drosophila melanogaster</i>	<i>Dme</i>
Sea lice	<i>Lepeophtheirus salmonis</i>	<i>Lsa</i>	
Nematodes	Model nematode*	<i>Caenorhabditis elegans</i>	<i>Cel</i>
	Gastro-intestinal* (ruminants)	<i>Haemonchus contortus</i>	<i>Hco</i>
		<i>Trichostrongylus colubriformis</i>	<i>Tco</i>
	Gastro-intestinal (poultry)	<i>Ascaridia galli</i>	<i>Aga</i>
	Gastro-intestinal (dogs)	<i>Toxocara canis</i>	<i>Tca</i>
		<i>Ancylostoma caninum</i>	<i>Aca</i>
	Filarial nematode (dog)	<i>Dirofilaria immitis</i>	<i>Dim</i>
Filarial nematode (rodent)	<i>Litosomoides sigmodontis</i>	<i>Lsi</i>	
	<i>Acanthocheilonema viteae</i>	<i>Avi</i>	
Vertebrate	Zebra fish	<i>Danio rerio</i>	<i>Dre</i>

* The full life cycle is maintained and reproduces in-house

Ion-channels

Category	Species	Ligand
Arthropods	<i>Tetranychus urticae</i>	ACh; GABA*; Glu; Gly
	<i>Varroa destructor</i>	ACh*; Glu
	<i>Ctenocephalides felis</i>	ACh; GABA; Glu
	<i>Blattella germanica</i>	Na ⁺ and VG (PARA)
	<i>Lepeophtheirus salmonis</i>	ACh; GABA; Glu
	<i>Rhipicephalus microplus</i>	GABA; Glu
	<i>Dermacentor variabilis</i>	ACh; GABA; Glu
	<i>Aedes aegypti</i>	ACh*; Opn*; Tyr*; His*; VG* GABA (sensitive & resistant)
	<i>Drosophila melanogaster</i>	Phenylacetaldehyde Propionic acid
	<i>Apis mellifera</i>	ACh
Nematodes	<i>Ancylostoma caninum</i>	GABA ACh*; GABA; Glu; Gly*; Ser
	<i>Dirofilaria immitis</i>	Amine* Ca ²⁺ and VG (SLO-1)
	<i>Haemonchus contortus</i>	ACh; Bet; GABA Ca ²⁺ and VG
	<i>Caenorhabditis elegans</i>	ACh; Bet Ca ²⁺ and VG
	<i>Canis lupus lupus</i>	ACh; GABA; Gly*; Ser* Ca ²⁺ and VG Na ⁺ and VG*
Vertebrates	<i>Gallus gallus</i>	ACh
	<i>Homo sapiens sapiens</i>	ACh; GABA
	<i>Mus musculus</i>	ACh

* Cloning currently in progress

ACh: acetylcholine
Bet: betaine
Glu: glutamate
Gly: glycine
His: histamine
Opn: octopamine
Ser: serotonin
Tyr: tyramine
VG: voltage-gated

SUPPLEMENTARY INFORMATIONS

Assay throughput (1/2)

Assay	Test ID	Rep/DTP	Compound (mg)	Max datapoint / year	Assay throughput	Price discount (HTS)
Flea oral *	INV-T-009	3	< 2	32'000	+++	++++
Blowfly adult oral	INV-T-012	3	< 2	Project-based	+	++
Fly adult oral	INV-T-015	3	< 15	Project-based	+	+
Tick adult oral	INV-T-020	2	< 15	Project-based	+	+
Tick adult feeding	INV-T-049	5	< 5	Project-based	+	+
Flea tarsal *	INV-T-010	3	< 2	32'000	+++	++++
Fly adult tarsal	INV-T-002	3	< 2	Project-based	+	++
Tick egg-to-larvae tarsal	INV-T-017	3	< 2	> 100'000	++++	++++
Tick larvae tarsal	INV-T-042	3	< 2	32'000	+++	+++
Tick nymph tarsal	INV-T-018	3	< 2	32'000	+++	++
Tick adult tarsal	INV-T-019	3	< 2	32'000	+++	+
Mosquito adult contact	INV-T-033	3	< 15	Project-based	+	+
Whitefly adult contact	INV-T-039	3	< 15	Project-based	+	+
Whitefly adult repellent	INV-T-040	3	< 15	Project-based	+	+
Tick larvae repellent	INV-T-022	3	< 2	Project-based	++	++
Tick nymph vertical repellent	INV-T-021	3	< 15	Project-based	+	+
Tick adult vertical repellent	INV-T-029	3	< 15	Project-based	+	+
Tick adult repellent (tracked)	INV-T-048	3	< 15	Project-based	+	+
Mosquito adult repellent 1 *	INV-T-025	3	< 2	Project-based	+	+
Mosquito adult repellent 2	INV-T-030	3	< 2	Project-based	+	+
Flea adult repellent	INV-T-043	3	< 15	Project-based	++	+++
Blowfly development *	INV-T-011	3	< 2	32'000	+++	++++
Flea development	INV-T-027	3	< 2	1'000	+	++++
Sea lice copepodite immersion	INV-T-016	3	< 2	10'000	+++	+
Tick adult immersion	INV-T-028	3	< 2	10'000	+++	+
Dust acarian mixed population	INV-T-032	3	< 2	Project-based	+	++
Flea oral development	INV-T-035	3	< 15	10'000	+	+
Tick adult injection	INV-T-047	3	< 15	Project-based	+	+

* Assays performed on a weekly basis

SUPPLEMENTARY INFORMATIONS

Assay throughput (2/2)

Assay	Test ID	Rep/DTP	Compound (mg)	Max datapoint / year	Assay throughput	Price discount (HTS)
Gastrointestinal nematodes larval development	INV-T-005	3	< 2	100'000	++++	++
<i>F. hepatica</i> adult immersion	INV-T-004	3	< 15	500	+	++
Gastrointestinal nematodes L ₃ immersion	INV-T-006	3	< 2	On request	++++	++
Nematode adult immersion	INV-T-041	3	< 10	On request	+	+
Filarial nematodes L1 immersion	INV-T-044	3	< 2	On request	++++	+++
Filarial nematodes L3 immersion	INV-T-045	3	< 2	On request	++	+
Migration trap assay	INV-T-031	3	< 2	100'000	++	++
<i>C. elegans</i> development*	INV-T-001	3	< 2	> 100'000	++++	+++
Zebrafish development	INV-T-003	3	< 2	10'000	++	++
<i>Xenopus</i> oocytes, agonist *	INV-T-502	3	< 1	5'000	++	++
<i>Xenopus</i> oocytes, antagonist *	INV-T-503	3	< 1	5'000	++	++
<i>Xenopus</i> oocytes, PAM/NAM *	INV-T-504	3	< 1	5'000	++	++
<i>Xenopus</i> oocytes, 123 *	INV-T-505	3	< 1	5'000	++	++
<i>Xenopus</i> oocytes, IVC *	INV-T-506	3	< 1	5'000	++	++
<i>Xenopus</i> oocytes, custom *	INV-T-507	3	< 1	5'000	++	++
Microtubulin polymerization	INV-T-023	2	< 1	> 50'000	+++	+
Acetylcholine esterase inhibition	INV-T-034	2	< 1	> 50'000	+++	+

* Assays performed on a weekly basis

SUPPLEMENTARY INFORMATIONS

References

The following references summarize the contribution of Invenesis in academic and / or industrial research:

Ion-channels & Receptor Pharmacology

- **Functional heteropentameric nAChRs from *Lepeophtheirus salmonis*.**
Rufener L. *et al. PLoS Pathog.* 2020. PMID: 32706718.
- **Electrophysiological profiling of tobacco alkaloids on human $\alpha 4\beta 2$ & $\alpha 7$ nAChRs.**
Alijevic O. *et al. Phytochemistry.* 2020. PMID: 31837534.
- **Isoxazoline activity on human and canine GABA receptors (*Xenopus oocytes*).**
Sager H. *et al. Parasit Vectors.* 2025. DOI: 10.1186/s13071-025-06213-3.
- **AlphaFold-Multimer modelling of linked nAChR subunits.**
Sahlström HM. *et al. bioRxiv.* 2025. DOI: 10.1101/2025.10.02.679753.

Antiparasitic Drug Discovery & Phenotypic Screening

- **High efficacy of lufenuron against *L. salmonis*.**
Poley JD. *et al. Int J Parasitol Drugs Drug Resist.* 2018. PMID: 29936347.
- **Nemacol – VAcHT inhibitor with anthelmintic activity.**
Harrington S. *et al. Nat Commun.* 2023. PMID: 36991074.
- **Antiparasitic properties of *Nicotiana* extracts.**
Schorderet Weber S. *et al. Food Chem Toxicol.* 2019. PMID: 31421105.
- **Antifilarial drug discovery – *In vitro* assays.**
Rufener L. *et al. Book chapter.* 2022. DOI: 10.1002/9783527823413.
- **SydLab™ – Automated on-chip screening in *C. elegans*.**
Duguet TB. *et al. bioRxiv.* 2025. DOI: 10.1101/2025.05.15.654210.

Collaborations



SUPPLEMENTARY INFORMATION

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