OPEN RESEARCH ON ENDOMETRIOSIS

What we know. What we're testing. *What we don't know yet.*

Endometriosis affects **~190 million people** — yet it took decades to be taken seriously, and it still gets a sliver of research funding. OpenEndo is an open project that tracks the evidence, finds new angles, and **tests ideas on computers before anyone touches a lab**. This page is an honest tour: what is established, what we are testing right now, and what remains unknown. Nothing here is medical advice — everything is sourced and open.

~190M people affected | ~7 yr average diagnosis wait | 0.05% of research funding | 100% open · MIT

WHY THIS EXISTS

A disease that *shouldn't* still be this invisible

Endometriosis is chronic, painful and common — yet diagnosis takes years and research is starved. The gap isn't a lack of patients. It's a lack of **organised, open evidence** that researchers, clinicians and patients can all build on.

190M
people live with endometriosis worldwide
WHO estimate — more than diabetes + epilepsy combined

~7yr
average time from symptoms to diagnosis
a disease waved away — the name says it

0.05%
of health research funding goes to it
per burden, it should be tens of times more

WHAT OPENENDO DOES

Four lanes, one goal: *better evidence, faster*

LIVE

📡 Watch the evidence

Every endometriosis trial, paper and grant — tracked weekly from public registries (ClinicalTrials.gov,

MERGED

🎯 Find new targets

Mapped the drug-target landscape — **58 targets**, of which **35 are truly novel** (no drug has ever

RANKED

💊 Repurpose drugs

Screened 9 approved drugs as candidates for endometriosis — ranked by mechanism,

TESTING

🧪 Test in silico

New: a virtual-testing pipeline — computer tests on structures and binding before any wet lab (see below).

PubMed), in the open.

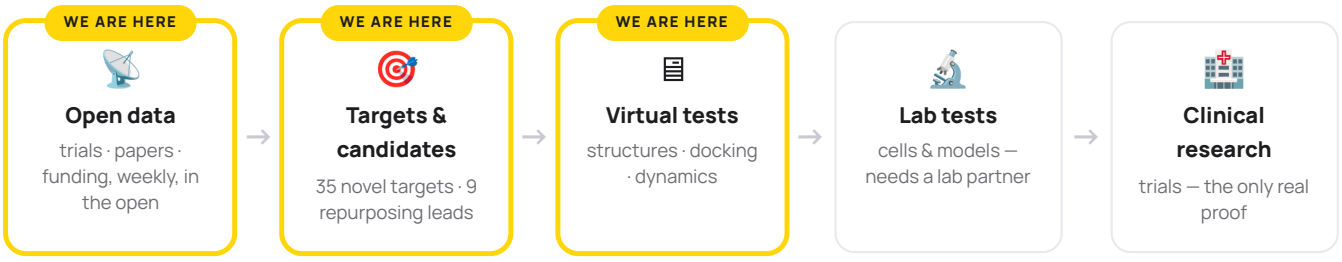
been developed against them).

evidence and safety (M3).

THE BIG PICTURE

From data to patient — *where we are*

Every treatment that exists today travelled this road. We are doing steps 1–3 openly, on computers, for ideas nobody else is pursuing. Step 4 needs a lab partner; step 5 needs clinical research.



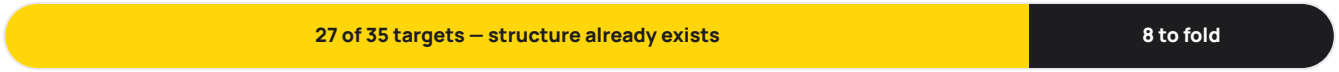
ESTABLISHED

What we know *(sourced & verified)*

KNOW

Verified facts, with dates and sources

- ✓ **The disease is under-researched, not rare.** ~190M affected (WHO); diagnosis delay ~7 years; ~0.05% of research funding.
  Sources: WHO; site stats — verified 2026-08
- ✓ **Denmark's access landscape is mapped.** Ryeqo has general reimbursement (≈849 kr./28 days); Yselty is approved but *not* reimbursed for endometriosis (out-of-pocket or individual application); two specialised centres treat severe disease (Rigshospitalet — East, AUH Skejby — West).
  Lægemiddelstyrelsen / sundhed.dk — verified 2026-09-02
- ✓ **58 drug targets mapped — 35 truly novel.** Cross-checked against ChEMBL (the drug industry's own database): 35 have *no drug ever developed against them*.
  targets.json — 2026-09-02
- ✓ **The screening method works.** Of 9 repurposing candidates, the computer screen flagged two as "wrong direction" — estradiol (it *activates* a growth receptor) and dinoprostone (it *is* the inflammatory signal PGE2). The method caught its own errors.
  m3-validation.md — 2026-09-02
- ✓ **Sirolimus (rapamycin) is the strongest repurposing lead.** Its mechanism (mTOR) has independent endometriosis evidence; it has 20+ years of safety data from transplant medicine.
  M3 validation — 2026-09-02, confidence medium-high
- ✓ **MRGPRX2 is a validated pain mechanism.** New 2026 studies link this mast-cell receptor to endometriosis pain — a specific, non-hormonal target.
  M3 validation
- ✓ **We can test these ideas right now.** Experimental 3D structures exist for every current test candidate (FKBP4, FKBP12, MRGPRX2, xCT); 27 of 35 novel targets already have predicted structures in AlphaFold DB.
  Phase 0 audit — 2026-09-02



already in AlphaFold DB (free, predicted) · need one folding run (~$1–3 total)

Experimental (cryo-EM / X-ray) structures also exist for the drug candidates being tested: FKBP4 · FKBP12 (control) · MRGPRX2 · xCT · ACVR1B.

IN PROGRESS

What we're testing right now *(hypotheses, on computers)*

TESTING **Each test produces a hypothesis — never a conclusion**

1. **Does sirolimus actually fit its target?** Molecular docking: sirolimus → FKBP4, with FKBP12 as a control — because we need to know if it can engage the endometriosis-relevant protein at all.
   Phase 1 · Vina docking · ~$5
2. **Can cetrorelix reach the pain receptor?** Docking the peptide drug against the MRGPRX2 cryo-EM structure — testing the pain-pathway idea computationally.
   Phase 1 · ~$3
3. **Does sulfasalazine's target move in the right direction?** Its target (xCT) is real — but a 2026 paper suggests ferroptosis may drive lesion growth, not shrink it. Direction must be resolved before this ranks higher.
   literature + docking · Phase 1
4. **Are the targets actually switched on in disease tissue?** Next free step: endometriosis-lesion gene data (GEO/single-cell) — is MRGPRX2 elevated in lesion mast cells specifically?
   Phase 0.5 · ~$0
5. **Fold the 8 targets nobody has a structure for.** AlphaFold on a rented GPU — a few dollars, a few hours.
   Phase 1 · ~$1–3

The evidence ladder — *where each candidate stands*

For a repurposed drug, the honest path has five rungs. We are climbing rungs 2–3 on computers; rungs 4–5 need laboratories and clinical research.

1. **Approved & safe for another disease**
   All 9 candidates passed this — that's the point of repurposing. **Sirolimus** has 20+ years of safety data.
2. **Mechanism fits endometriosis biology**
   Done for 9/9 (M3 validation): **sirolimus** strongest · **MRGPRX2** axis validated · two candidates failed this rung honestly.
3. **Physically binds the target**
   In progress — docking on experimental structures (Phase 1). Controls included so we don't fool ourselves.
4. **Works in endometriosis models**
   Needs a wet lab (cells / animal models). **We are looking for a lab partner.**
5. **Helps patients in trials**

Years away — and only clinical research can ever prove it. Our work exists to make that more likely, cheaper and better-targeted.

The 9 candidates, after ranking

Sirolimus (rapamycin)	mTOR pathway — independent endometriosis evidence, huge safety history	TOP TIER
Cetrorelix	already used in endo — validates MRGPRX2 pain target, not a new drug	AXIS VALIDATED
Sulfasalazine · Tacrolimus · Cyclosporine · Crizotinib/Dabrafenib	real mechanisms but open questions: toxicity, immunosuppression, or drug-target mismatch	WATCHLIST
Estradiol · Dinoprostone (PGE2)	wrong direction — would feed the disease, not fight it. Caught by the screen.	WRONG DIRECTION

HONEST GAPS

What we don't know yet

UNKNOWN **We'd rather say "we don't know" than pretend**

? **Does sirolimus actually help endometriosis?** No endometriosis trial exists. Docking can say "it fits"; only a lab and trials can say "it helps".
the honest ceiling of computer work

? **Which direction does ferroptosis go in endometriosis?** A Sept 2026 paper links it to lesion *progression* — if true, drugs that trigger it (sulfasalazine) could backfire. Unresolved.
must-read before ranking

? **Is MRGPRX2 really elevated in lesion mast cells?** It's absent from healthy bulk tissue (expected for a mast-cell receptor) — the disease-specific question needs lesion data.
Phase 0.5

? **Does a good computer binding predict a good real binding?** Usually yes-ish, sometimes no. That's why docking is followed by dynamics, and why both still need a lab.
methodological humility

? **Would a selective ACVR1B inhibitor work?** The biology says yes — but no such drug exists. Building one is a decade-scale project.
parked honestly

? **Funding.** All of this runs on evenings and small GPU rentals. A lab partnership or grant would change the pace completely.

PLAIN WORDS

What the terms mean

+ **What is a "drug target"?**

+ What is "repurposing"?

+ What is AlphaFold / a "predicted structure"?

+ What is "docking"?

+ What is "molecular dynamics"?

+ What is ChEMBL?

+ What does "confidence" mean on our pages?

JOIN IN

How you can help

SHARE

Send this page to one person who should know the disease is under-researched.

LABS

Are you in endometriosis or drug research? We need a wet-lab partner for rung 4.

DATA

Spot a missing trial, paper or funding call? Add it — the dataset is open (GitHub).

FUND

GPU hours cost dollars, not millions. Support open endometriosis research.

READ THIS FIRST

OpenEndo is open research infrastructure — not a medical service, and nothing here is medical advice. Every claim carries a source and a confidence label; computational results are hypotheses until confirmed in the lab. If you have endometriosis symptoms, talk to a clinician — and in Denmark, Endometriose Fællesskabet (endo.dk) offers free counselling.