

A kid-friendly artificial and natural selection app co-created with Claude

Ken Kahn - [home](#)

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A FIELD GUIDE TO EVOLVED DRAWINGS

Specimens & Their Descendants

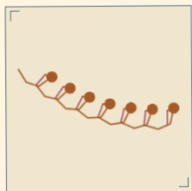
You are the breeder. Pick whichever specimen you like — the prettiest, the oddest, the simplest — and six children will be bred from it.

GENERATION 1

Begin Anew Selection You choose Pattern Nested repeats Style Playful Ask a question What is this?

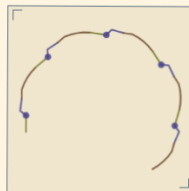
Each specimen is grown from a tiny program. Pick a favourite to see what its children look like.

Specimen 1 enlarge edit



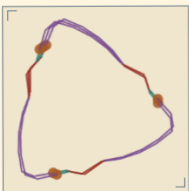
```
REPEAT 7 [  
  COLOR rose  
  FORWARD 18 RIGHT 35  
  COLOR rust  
  RIGHT 33 FORWARD 9  
  RIGHT 44  
  REPEAT 3 [ RIGHT 27 DOT 7 ]  
  FORWARD 21 RIGHT 27
```

Specimen 2 enlarge edit




```
REPEAT 5 [  
  COLOR olive  
  FORWARD 20 LEFT 29  
  COLOR indigo  
  LEFT 24 DOT 4  
  FORWARD 9 RIGHT 30  
  RIGHT 30 FORWARD 15  
  LEFT 39 RIGHT 32
```

Specimen 3 enlarge edit



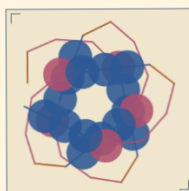
```
REPEAT 7 [  
  COLOR crimson  
  FORWARD 18 RIGHT 45  
  FORWARD 12 LEFT 23  
  COLOR teal  
  FORWARD 10 RIGHT 46  
  LEFT 46  
  COLOR rust
```

Specimen 4 enlarge edit




```
REPEAT 6 [  
  COLOR crimson  
  REPEAT 2 [  
    FORWARD 14 LEFT 34  
    FORWARD 20  
  ]  
  LEFT 21 FORWARD 17  
  LEFT 44 LEFT 46
```

Specimen 5 enlarge edit



```
REPEAT 5 [  
  COLOR rust  
  FORWARD 11  
  COLOR rose  
  RIGHT 32 RIGHT 35  
  FORWARD 11 RIGHT 27  
  FORWARD 13 RIGHT 41  
  FORWARD 13 RIGHT 33
```

Specimen 6 enlarge edit



```
REPEAT 6 [  
  COLOR gold  
  FORWARD 12 LEFT 21  
  LEFT 40 FORWARD 19  
  LEFT 37  
  COLOR magenta  
  LEFT 21 FORWARD 10  
  COLOR brown
```

After I created [a micro-behaviour evolution lab app](#) I wasn't happy with it so [I told Claude Opus 4.7](#):

I'm not really learning much from using this app. Maybe we have a negative outcome. I think I'll stop developing it further (at least for a while).

I am wondering if a much much simpler version that was aimed at school students would be worth doing. What would be the simplest version that would both produce some interesting evolution and some interesting images?

Claude responded "The school-version question is genuinely interesting, and I think the answer is: yes, worth doing, and not as a consolation prize." Claude then proceeded to write a proposal to create an app for evolving tiny Logo programs.

When I told it to go ahead and implement it [a very good simple app](#) was produced right away. I did nothing with it.

A week later I returned to this project and wanted to test out Claude Opus 4.8. [I uploaded the app and prompted:](#)

This is a good start for an app to introduce some ideas about evolution to children. How can we improve it?

I didn't tell it that a different version of Claude created it and was amused by its response:

This is a lovely little Biomorphs-lineage piece of work — clean interpreter, the genome shown right under each phenotype, and the field-guide framing does real pedagogical work.

[Biomorphs](#) is a similar program that Richard Dawkins wrote forty years ago. Claude continued with an eight paragraph long response. It suggested we focus on breeding (what Darwin called "artificial selection" since humans do the selecting rather than nature). Claude emphasized that the sequence of generations should be visible as should the mutations.

I made a few suggested improvements over the next three exchanges and a good artificial selection app was working fine. A child needed to simply click on one of six images generated by short Logo programs and instantly six children appeared. The edits to the parent program were highlighted in each child. The app had a nice help panel. See image at the top of this post. The lineage of descendants was displayed nicely.

Adding natural selection

When Claude asked if I wanted to proceed to add natural selection I responded:

Sure, let's explore natural selection. By the way would it make sense to take advantage of the Claude API from the artifact? At least as an option.

We started with simple rules packaged up as interface options where the user chooses among four environments. E.g.



By relying upon simple metrics like number of colors this feature is very fast and easy to understand. The user can choose between the fitness scores determining the odds of having a child or using a "greedy algorithm" that always selects the highest scoring specimen.

Later I asked Claude to support user-defined habitats.



We then moved on to adding a user-defined open-ended environment powered by AI:

THE HABITAT

A Naturalist's Eye AI

An A.I. looks at each specimen and judges it against a niche you describe.

Instead of a fixed rule, a vision model is shown the six specimens and asked how well each suits a habitat you describe in your own words.

Judged by an A.I. against the niche you describe below — change the words and the pressure changes.

Running inside Claude.ai — judged by Claude directly, no key needed. (Claude reads each specimen's program; it cannot see the pictures here.)

The niche the judge selects for:

A pollinator that prefers specimens looking like big, colourful flowers.

After four or five exchanges to get the API calls to work, this feature functions fine when the app is in a Claude artifact. For the hosted HTML page version the user can enter an API key for Anthropic, OpenAI, or Gemini.

Ask a question

To add the ability for a user to ask questions I only needed to prompt:

Let's add an ask-AI-questions feature. The user might ask about evolution, the way the app works, how it was made, or about a particular aspect of the line of descent. But it should try to keep the user focused on the task of understanding evolution.

Here are three questions and answers:

how can I evolve images that look like dogs?

Great goal — that's exactly the kind of experiment this app was built for!

The best route is to use "A Naturalist's Eye" habitat and type something like "a dog shape: four legs, a body, and a head" as your niche. The A.I. judge will then score each specimen for how dog-like it looks, and natural selection will nudge the population in that direction over many generations.

You can also just **breed by hand** — each time a litter appears, pick whichever one looks even a tiny bit more dog-shaped than the others, even if it's barely noticeable. That's artificial

selection, exactly what dog breeders have done for thousands of years to create every breed from wolves. The key lesson here is *cumulative selection*: no single mutation makes a dog, but many small steps chosen in the same direction can travel surprisingly far!

how come it doesn't even look a tiny bit like a dog after 10 generations

That's such a great question, and it gets at something really important about evolution!

The honest answer is that your scores have been quite low — mostly in the 20s and 30s — which suggests the AI judge isn't seeing much dog-likeness to reward. Evolution by selection only works if the *fitter* individuals actually breed more; if scores stay low across the board, it means the mutations haven't yet stumbled onto shapes that look more dog-like, so there's no real "ladder" for selection to climb.

Think of it like this: the mutations are tiny and random, so the program is searching a huge space of possible drawings almost blindly. Dawkins called this "cumulative selection" — it works beautifully *when* each generation is a little better than the last, but if none of the six children score higher than their parent, you're kind of stuck wandering. You might try switching back to "You Choose" mode and picking whichever child looks *even slightly* more dog-shaped to you — your eye might guide it faster than the AI scorer can!

who won the world series

Ha, I'm not the best guide for baseball questions — my expertise is more in fins and feathers than fastballs! I genuinely don't know the latest World Series winner.

What I *do* know is that your dog-shape experiment is at a really interesting moment — the scores dipped and are now climbing back up (21% → 25%). That's actually a lot like real evolution: populations sometimes get worse before they find a better path. Want to keep selecting and see if the scores keep rising?

The app

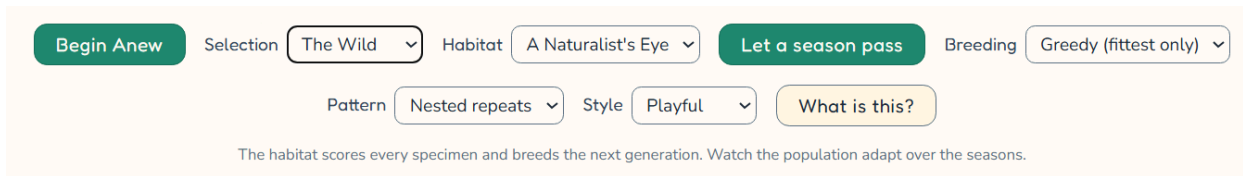
If you want to explore the AI option without an API key then use [this Claude artifact](#). You will need a Claude account but a free one should work. If you have an API key for Gemini or

ChatGPT or don't plan to use AI at all then use [this version](#). [I tricked Gemini](#) into making [a keyless API version for Gemini users](#). The Gemini version also supports speech input and output. The app is implemented in 1900 lines of HTML, CSS, and JavaScript.

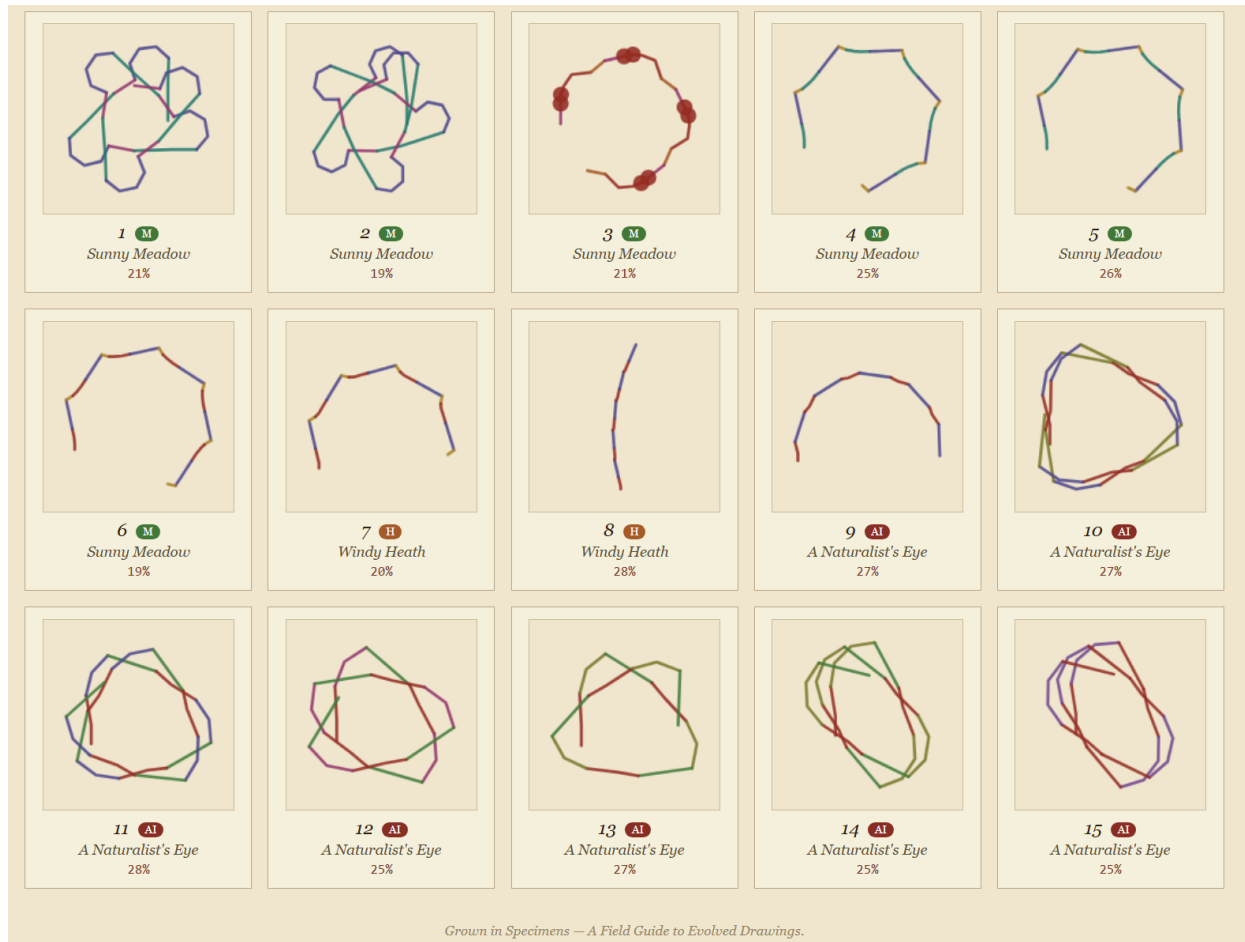
The interface includes:



The style can be changed to be more kid-friendly:



One nice feature is that you can save the evolutionary record as an HTML file. E.g.



Here is [the interactive version](#).

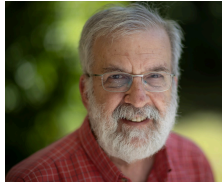
My reflections

Regarding the process of creating this app I am very impressed with how smoothly it went. Very few bugs. I was able to bring up multiple issues at once without difficulty. Claude has a very good design sense both at the interface level but also the design of features. Claude Opus 4.8 shows the steps it is working on as it is working on the next version of the app. It internally had generated over a thousand tests and ran them before handing me a new version. Sometimes it finds problems this way and fixes them automatically.

This is fantastic for easily creating very ambitious apps. Most of my time was waiting for my quota to renew. I was able to concentrate on the high-level design and pedagogic issues. A few months ago I would have needed to spend much more time testing and reporting bugs. And remedying a chatbot's bad design choices. As I write this Gemini (3.1 Pro and 3.5 Flash) are a few months behind Claude and ChatGPT.

Regarding the app itself, I would love to try it out on children (and I will next time the grandchildren are visiting). If any teachers want to try it out in a classroom I'm more than happy to help. I think apps like this have real educational value. And yet took me only a day to make.

About me



I've been researching AI, creativity, and education for fifty years. I started when working on my phd from the MIT AI lab. Most recently I wrote a book about how anyone can use chatbots to co-create apps, adventures, illustrated stories, and discussions.

[The Learner's Apprentice: AI and the Amplification of Human Creativity](#)

In the book I describe how one can turn ideas into apps, illustrated stories, debates, and much more by conversing with chatbots.

You can follow me on [LinkedIn](#), [Facebook](#), [Threads](#), or [BlueSky](#).