

# How I read, annotate, & organize research papers using Zotero + Notion

A post for researchers who read a LOT of papers



Anna Everett · [Follow](#)

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For researchers, it is essential to keep up on your field's current literature (e.g., articles and reviews) and organize them for easy access. When you need a citation for a paper or a grant, you'll be glad to have all your papers and notes stored in one place.



Photo Credit: Jose A. Bernat Bacete/Getty

This method was inspired by a few people, including [David Vanoni](#), but most recently Maya Gosztyla who has an amazing [Twitter thread](#), [Notion template](#), and [Nature article](#) on this very topic. She is a current grad student at UCSD, and you can follow her on Twitter [here](#).

I hope this method and my added insights/screenshots will help people who want a better paper organization system. It has helped me create an entire database of relevant papers to my field of study (neuroscience).

My two main tools are [Zotero](#) and [Notion](#).

## What is Zotero?

[Zotero](#) advertises itself as “your personal research assistant.” In other words, it’s a reference manager where you can collect, organize, and annotate your research.

Why is Zotero the best reference manager?

1. It's free.
2. You can use it with MS Word, LibreOffice, and Google Docs.
3. There's a browser plugin for Google Chrome (Zotero Connector), so that you can download any paper (along with its PDF) into Zotero.
4. You can collaborate for free with as many people as you want.
5. **It's open source** and developed by a nonprofit organization. Being open source means that anyone can create a plugin (e.g., Notero) to make your life better. More on this later.

The screenshot shows a Zotero library window titled "Neuro 480". The left sidebar lists categories like "My Library", "HH Project", "Neuro 480", etc. The main area displays a list of research papers with columns for Title, Creator, Year, Date Added, and a preview icon. A specific paper is selected: "Motor skill learning requires active central myelination" by McKenzie et al. (2014). The right side shows detailed information for this paper, including the abstract: "Myelin-forming oligodendrocytes (OLs) are formed continuously in the healthy adult brain. In this work, we study the function of these late-forming cells and the myelin they produce. Learning a new motor skill (such as juggling) alters the structure of the brain's white matter, which contains many OLs, suggesting that late-born OLs might contribute to motor learning. Consistent with this idea, we show that production of newly formed OLs is briefly accelerated in mice learning a new skill (juggling), forming a 'complex wheel' with irregularly spaced rungs). By genetically manipulating the transcription factor myelin regulatory factor in OL precursors, we blocked production of new OLs during adulthood without affecting preexisting OLs or myelin. This prevented the mice from mastering the complex wheel. Thus, generation of new OLs and myelin is important for learning motor skills." Below the abstract are sections for Publication, Series, Language, DOI, ISSN, Short Title, URL, Accessed, Archive, Loc. in Archive, Library Catalog, and PubMed.

A screenshot of my personal Zotero.

## What is Notion?

Notion is a powerful, customizable workspace where you can write, plan, and organize just about anything. According to their website:

*We're more than a doc. Or a table. Customize Notion to work the way you do.*

You can creates **pages** of content in Notion and then organize them into **databases** that can be sorted and filtered anyway you'd like to.

- Page = a fresh “canvas” for content
- Database = collection of pages



## Daily Dash

**Personal Shortcuts**

- Journal
- Yearly Reviews
- Tasks

**Work/School Shortcuts**

- Grad Schools
- Projects
- Papers
- Fellowships

**Master Tasks**

	Name	Projects	Priority	⋮
<input checked="" type="checkbox"/>	Table			

A screenshot of my main dashboard in Notion.

A screenshot of my **database** called “Projects.” Each project links to a **page** with more information about the project.

## My Four-Step Paper Organization System

1. Download a new paper to Zotero using **Zotero Connector** (a Google Chrome extension).
2. Annotate and highlight article in Zotero.
3. Automatically sync papers to Notion using the **Notero plugin** created by David Vanoni (This stores all the papers in an organized database with 0 effort).
4. For important papers, take detailed notes in Notion (Notion Pro is free for all students and educators).

### Step 1: Download a new paper to Zotero

When I find a paper that I want to read, I use **Zotero Connector**—a Google Chrome plugin for Zotero. I simply click the extension button (**pink box**) and it automatically downloads all the important information for the article and a copy of the PDF to Zotero (**red oval**).

- Note: it will only download the PDF if you have access to it (e.g., open-access, university access, or personal access).

Rax-CreERT2 knock-in mice: a tool for selective and conditional gene deletion in progenitor cells and radial glia of the retina and hypothalamus

Thomas Pak <sup>1</sup>, Sooyeon Yoo <sup>1</sup>, Ana L Miranda-Angulo, Hong Wang <sup>1</sup>, Seth Blackshaw <sup>2</sup>

Affiliations + expand

PMID: 24699247 PMCID: PMC3974648 DOI: 10.1371/journal.pone.0090381

[Free PMC article](#)

**Erratum in**  
PLoS One. 2014 Jul;9(7):e102875. Miranda-Angulo, Ana M [corrected to Miranda-Angulo, Ana L]

**Abstract**  
To study gene function in neural progenitors and radial glia of the retina and hypothalamus, we developed a Rax-CreERT2 mouse line in which a tamoxifen-inducible Cre recombinase is inserted

Example of downloading a paper to Zotero.

## Step 2: Annotate and highlight article in Zotero

Double click any paper in Zotero and the PDF will show up in a new tab ready for you to highlight and make comments on.

**Rax-CreER<sup>T2</sup> Knock-In Mice: A Tool for Selective and Conditional Gene Deletion in Progenitor Cells and Radial Glia of the Retina and Hypothalamus**

**Thomas Pak<sup>1</sup>\*, Sooyeon Yoo<sup>1</sup>, Ana M. Miranda-Angulo<sup>1,2</sup>, Hong Wang<sup>1</sup>, Seth Blackshaw<sup>1,2,3,4,5,6\*</sup>**

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**Abstract**

To study gene function in neural progenitors and radial glia of the retina and hypothalamus, we developed a *Rax-CreER<sup>T2</sup>* mouse line in which a **Tamoxifen-inducible Cre recombinase** is inserted into the endogenous *Rax* locus. By crossing *Rax-CreER<sup>T2</sup>* with the Cre-dependent AAV reporter line, we demonstrate that tamoxifen-induced Cre activity recapitulates the endogenous *Rax* mRNA expression pattern. During embryonic development, Cre recombinase activity in *Rax-CreER<sup>T2</sup>* is confined to retinal and hypothalamic progenitor cells, as well as progenitor cells of the posterior pituitary. At postnatal time points, selective Cre recombinase activity is seen in radial glial-like cell types in these organs – specifically Müller glia and tanycytes – as well as pituicytes. We anticipate that this line will prove useful for cell lineage analysis and investigation of gene function in the developing and mature retina, hypothalamus and pituitary.

**Citation:** Pak T, Yoo S, Miranda-Angulo AM, Wang H, Blackshaw S (2014) Rax-CreER<sup>T2</sup> Knock-In Mice: A Tool for Selective and Conditional Gene Deletion in Progenitor Cells and Radial Glia of the Retina and Hypothalamus. PLoS ONE 9(6): e99381. doi:10.1371/journal.pone.0099381

**Editor:** Branden Nelson, Seattle Children's Research Institute, United States of America

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recent years, the use of mice carrying targeted conditional mutations has led to a considerable advance in our understanding

of the developmental gene programs [9–13]. The mice described in the *Rax-IRES-(T2A)-tetO-Cre* line [11], which expresses Cre from the 5' end of the endogenous *Rax* transcript, is a distinctive

Highlighted and annotated paper in Zotero.

### Step 3: Sync papers to Notion database

To sync papers automatically into Notion, I use an amazing plugin called [Notero](#). A complete guide to setting Notero up is available on [GitHub](#). Follow the instructions carefully, and it should work great.

Now, when I download a paper to Zotero using my Google Chrome extension, important information about the paper instantly syncs into a Notion database. In my screenshot below, you can see some of this information. I originally used one of the templates on Github for this.

- Synced information includes: full citation, keywords, DOI, authors' names, etc. All of this information is available on the specific page for the paper.

I have columns for **Status** (Need to Read, Skimmed, Annotated, Didn't Read), **Type** (Manuscript, Review, Method, Resource), **Interesting** (1 star, 2 star, 3 star), **Action Items** (urgent, very urgent, completed), and **Relevant Projects**. This was based on a template from Maya Gosztyla that you can find [here](#).



The screenshot shows a Notion database titled "Papers". The interface includes a header with navigation icons (back, forward, search, etc.) and a title bar. Below the header is a banner featuring a photograph of a large stack of physical research papers and binders. The main content area is a table view with the following columns: Name, Title, Status, Type, Interesting?, Action Items, Relevant Projects, and a "New" button. The table lists five research papers, each with a small thumbnail icon, the author(s) and year, a brief abstract, and project tags like "Hypothalamic Hamartoma" or "NSF-GRFP". At the bottom left, it says "COUNT 24", and at the bottom right is a help icon.

Name	Title	Status	Type	Interesting?	Action Items	Relevant Projects	New
(Corman et al., 2018)	Distinct temporal requirements for Sonic hedgehog signaling in development of the tuberal hypothalamus	Need to Read	Manuscript	!!		Hypothalamic Hamartoma	
(Vokes et al., 2008)	A genome-scale analysis of the <i>cis</i> -regulatory circuitry underlying sonic hedgehog-mediated patterning of the mammalian limb	Need to Read	Manuscript	!!		Hypothalamic Hamartoma	
(Pak et al., 2014)	Rax-CreERT2 Knock-In Mice: A Tool for Selective and Conditional Gene Deletion in Progenitor Cells and Radial Glia of the Retina and Hypothalamus	Need to Read	Manuscript	!!		Hypothalamic Hamartoma	
(Monje & Káradóttir, 2021)	The bright and the dark side of myelin plasticity: Neuron-glia interactions in health and disease	Need to Read	Review			NSF-GRFP	
(de Faria et al., 2021)	Periods of synchronized myelin changes shape brain function and plasticity	Need to Read	Review			NSF-GRFP	

Notion database for papers. All papers are synced from Zotero using the Notero plugin.

#### Step 4: Take detailed notes in Notion

When the paper was synced into Notion it automatically creates a “page” for the paper. You can click on the paper name and it will open up to a page where you can take detailed notes. I like to include important definitions and screenshots of figures.

**Major Findings**

- Shh (sonic hedgehog) = involved in brain and spinal cord development
  - role in hypothalamus unknown due to complex neuroanatomy
- Use fate mapping and conditional deletion models in mice to define requirements for dynamic Shh activity at distinct developmental stages in the tuberal hypothalamus
- At early time points, Shh signaling regulates:
  - dorsoventral patterning
  - neurogenesis
  - size of ventral midline
- Shh-expressing and -responsive progenitors contribute to distinct neuronal subtypes
- conditional deletion of Smo after dorsoventral patterning reveals that Shh signaling is necessary to maintain proliferation and progenitor identity during peak periods of hypothalamic neurogenesis
- mosaic disruption of Smo causes a non-cell autonomous gain in Shh signaling activity in neighboring wild-type cells
  - mechanism for hypothalamic hamartomas

**A** Nissl Stain. **B** Olig2-GFP. **C** Krt-GFP. **D** Gfap. **E** NSF-GRFP.

The bright and the dark side of myelin

Need to Read Review COUNT 25

Example of a “page” in Notion for a paper I read.

## Conclusion

The result of all of this is a Notion database with every paper I have skimmed, annotated, or read along with papers I want to read. All papers can be sorted or filtered by any property (relevant project, completion status, etc.). This method also allows me to have papers organized in Zotero to easily create bibliographies and citations.

This system has worked very well for me, but ultimately make sure to do what's best for you.

Please comment with any questions, and happy reading!

*August 22, 2022 edit:*

For more detailed instructions on how to set this up, I recommend [Holly Jane's YouTube tutorial](#). I also published a Medium article that may help: [A technical guide to setting up Notero \(Zotero + Notion plugin\)](#)

**Anna Everett** earned her B.S. in Neuroscience in 2022. She is a researcher, mental health educator, and advocate for women and other marginalized groups. She writes about life, productivity, the brain, human behavior, & health.

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Work without distraction on your own or with your team.

[Download for Mac](#)[Download for Windows](#) Anna Everett

### A technical guide to setting up Notero (Zotero + Notion plugin)

For those who want more detailed instructions on how to set up Notero (a plugin that connects your Zotero reference manager to your Notion...)

6 min read · Aug 22, 2022

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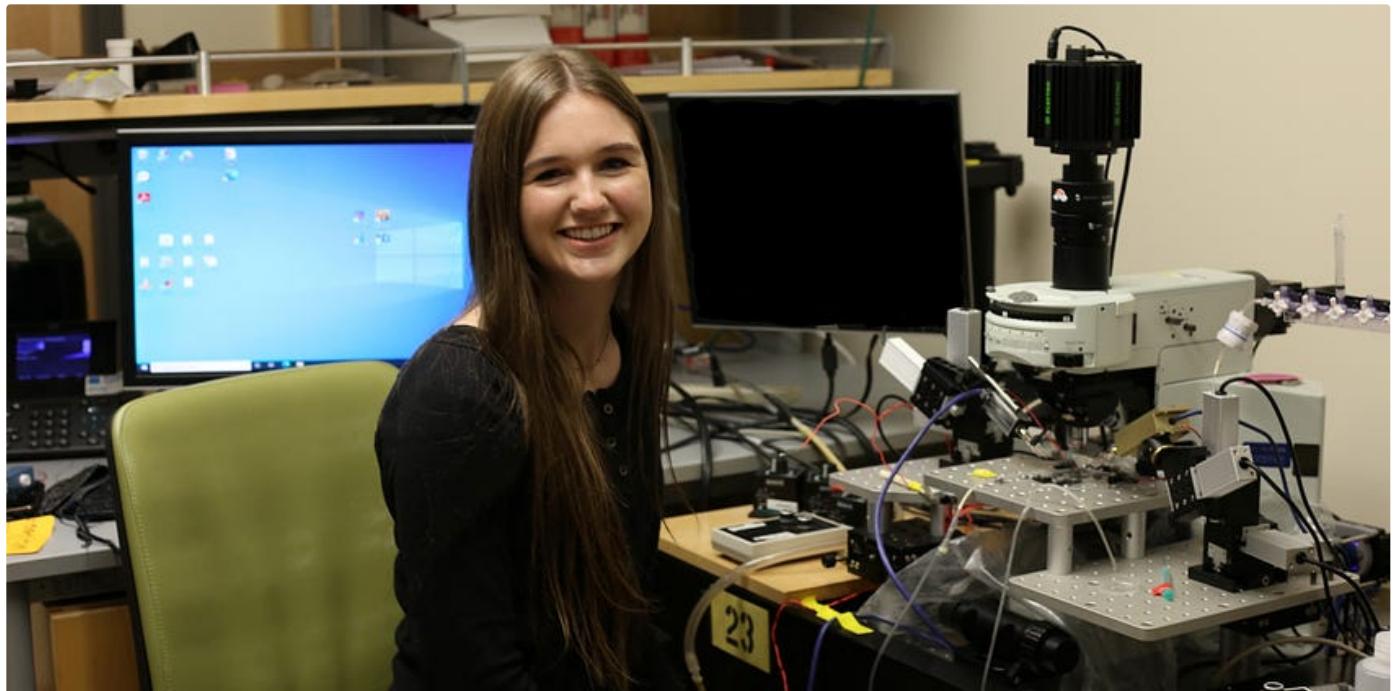
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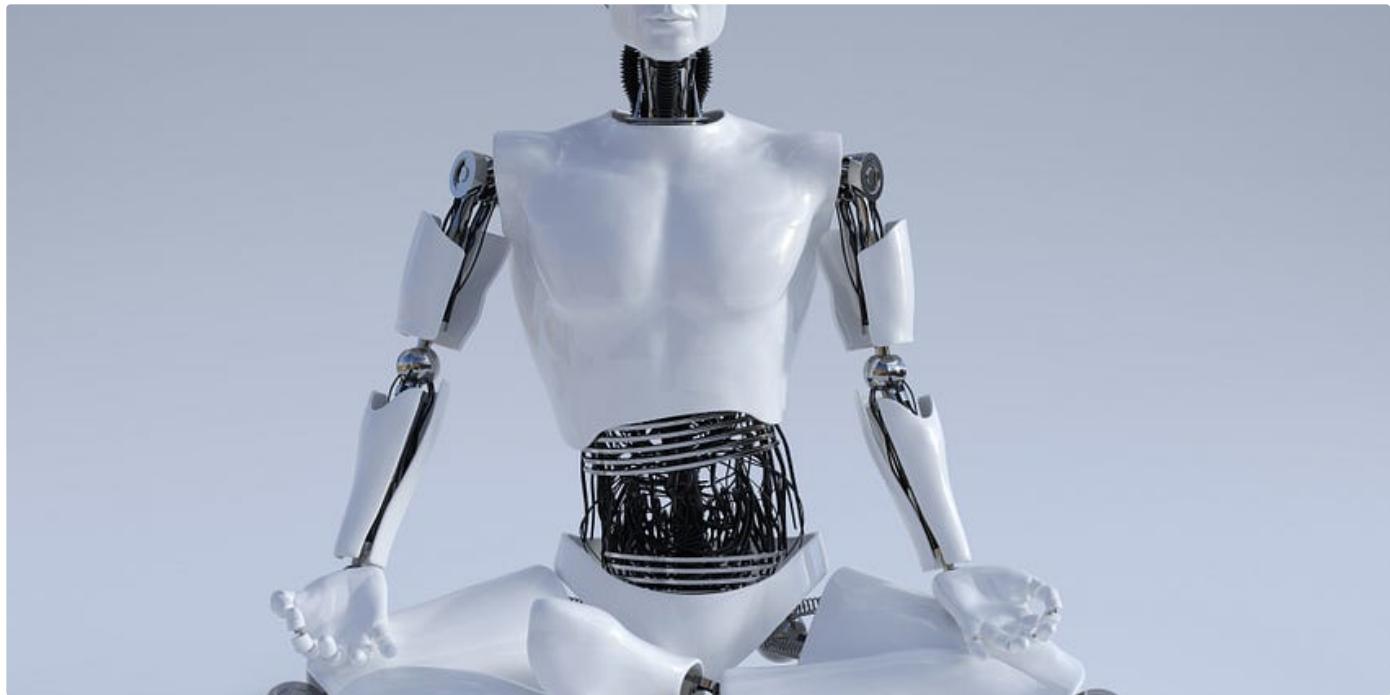
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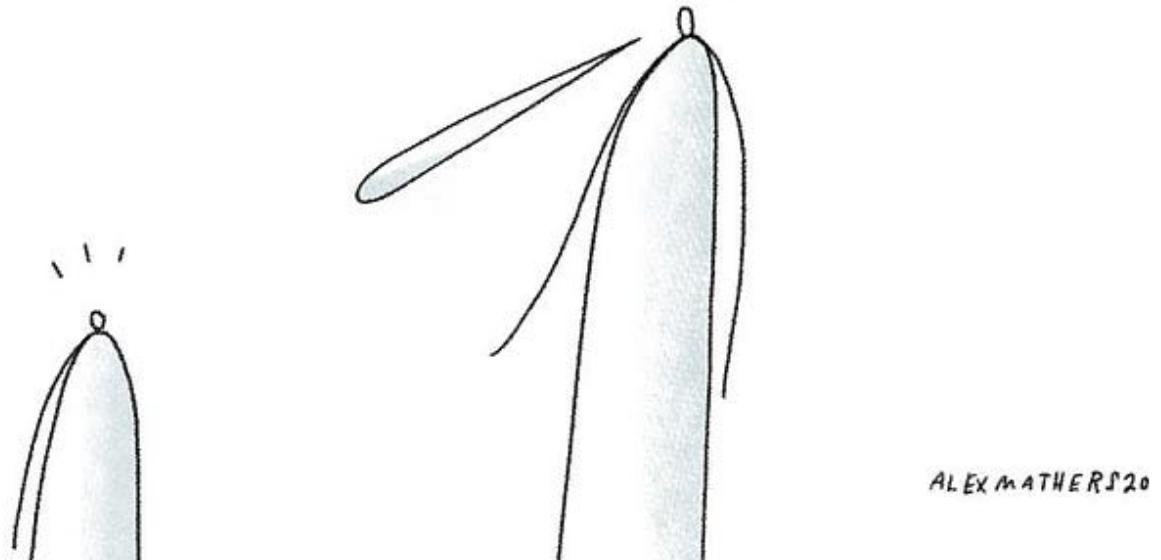
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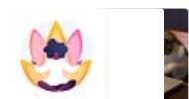
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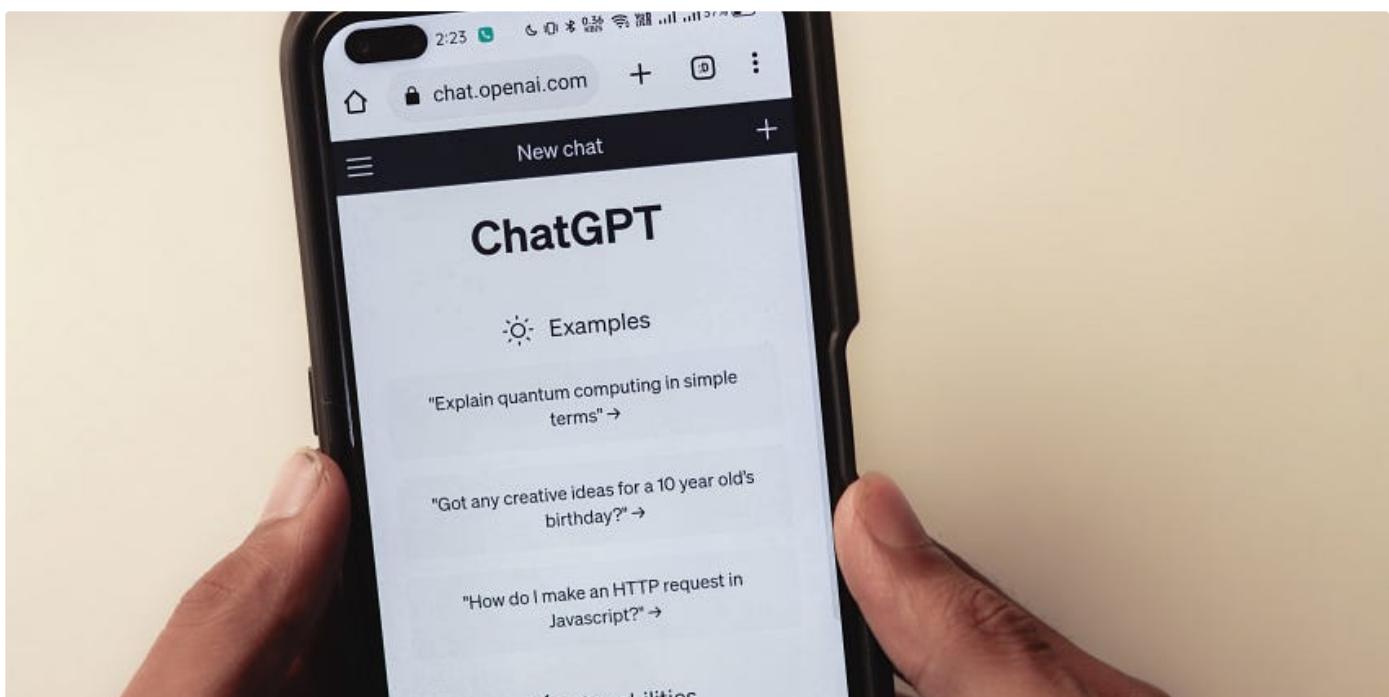
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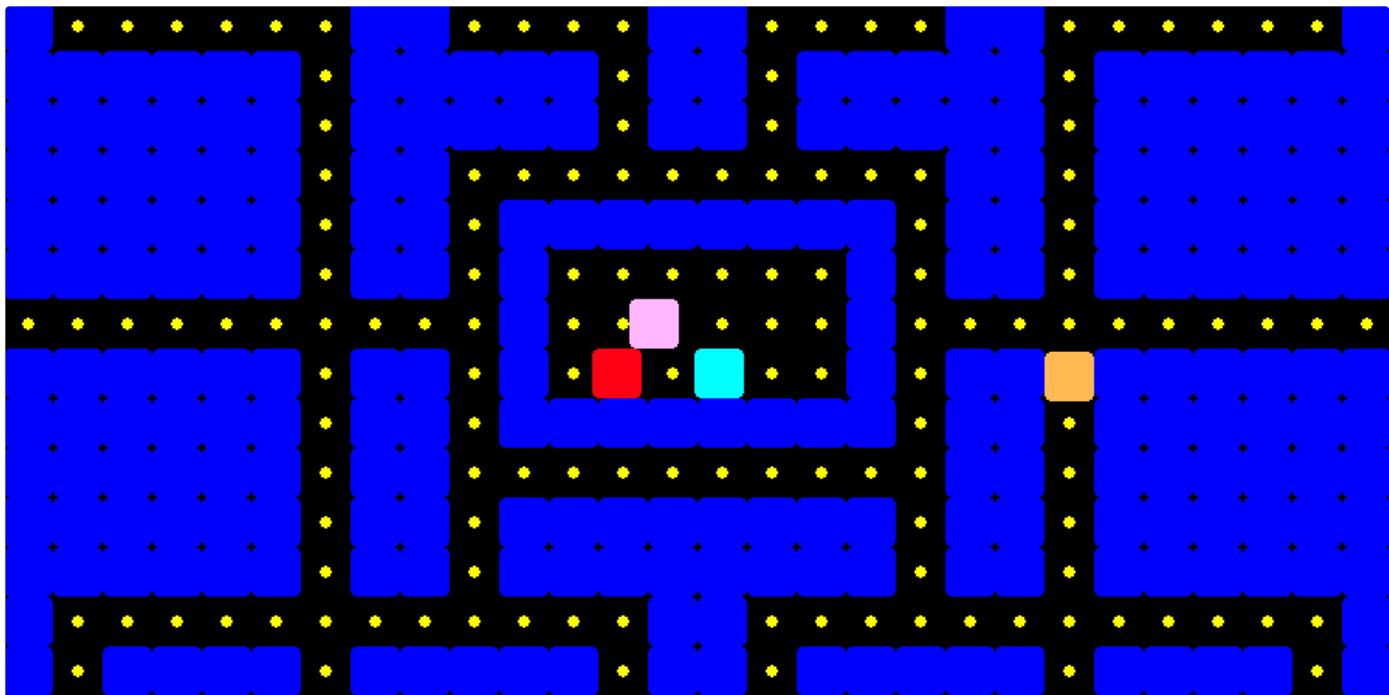
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