# Article information:

Striatal and hippocampal contributions to flexible navigation in rats and humans - Christoffer J. Gahnstrom, Hugo J. Spiers, 2020
<https://journals.sagepub.com/doi/10.1177/2398212820979772>

# Article summary:

1. The hippocampus is crucial for flexible navigation and the creation of cognitive maps.

2. The dorsal striatum also plays an important role in goal-directed behavior, particularly in response learning.

3. Future research should explore neural responses during spatial navigation using reinforcement learning models and observe the interaction between cortical areas and both the dorsal striatum and hippocampus during flexible navigation.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article "Striatal and hippocampal contributions to flexible navigation in rats and humans" by Christoffer J. Gahnstrom and Hugo J. Spiers provides a comprehensive review of the role of the dorsal striatum and hippocampus in flexible navigation. The authors argue that while the hippocampus has been established as playing a crucial role in flexible navigation, recent evidence suggests that the dorsal striatum may also play an important role in such goal-directed behavior in both rodents and humans.

The article provides a detailed overview of various studies that have investigated the neural responses during spatial navigation via a biophysically plausible framework explained by reinforcement learning models. The authors highlight the importance of exploring the interaction between cortical areas and both the dorsal striatum and hippocampus during flexible navigation.

One potential bias in this article is that it focuses primarily on the role of the dorsal striatum in flexible navigation, while downplaying its limitations compared to the hippocampus. While it is true that recent research has highlighted the importance of the dorsal striatum in response strategy navigation, it is important to note that this type of learning is not traditionally considered flexible because it is tied to specific features of the environment.

Another potential bias is that while the article acknowledges some limitations of biophysically plausible modeling, it does not explore alternative models or counterarguments to reinforce its claims. For example, while reinforcement learning models can capture one-shot learning, they lack a biological basis for an allocentric coordinate system receiving input from place cells.

Overall, this article provides valuable insights into current research on flexible navigation but could benefit from exploring alternative perspectives and acknowledging limitations more thoroughly.

# Topics for further research:

* Alternative models for spatial navigation
* Limitations of reinforcement learning models
* Allocentric coordinate system in spatial navigation
* Role of other brain regions in flexible navigation
* Comparison of dorsal striatum and hippocampus in spatial navigation
* Neural mechanisms of one-shot learning in spatial navigation

# Report location:

<https://www.fullpicture.app/item/699ca1177897a4471dc608b8b599857c>