

# Partner preference is modulated by sexual experience in female rats

Rachel R. Bachman, Jin Hong Park, Ria Sekhawat, Sarah H. Meerts  
Department of Psychology, Carleton College, Northfield, MN

Carleton College

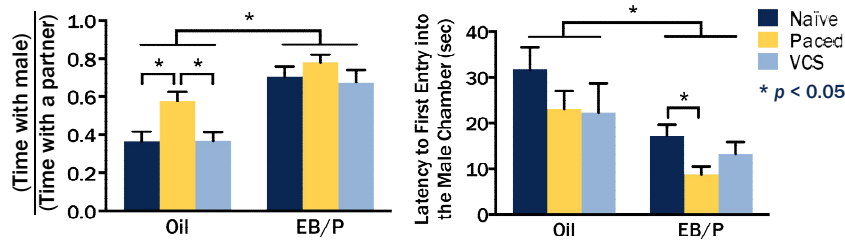
## Introduction

The greater time spent with the male rat during paced mating by sexually experienced compared to naïve female rats may indicate enhanced sexual motivation.

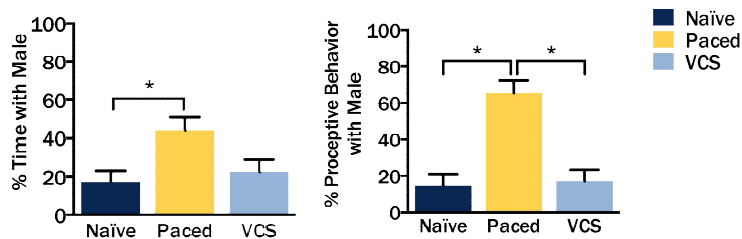
We tested whether paced mating experience or vaginocervical stimulation (VCS) alone affected No Contact partner preference in ovariectomized rats under oil and estradiol plus progesterone (EB/P).

Rats then received a test of paced mating behavior 60 min prior to brain collection to measure Fos and nitric oxide synthase (NOS) immunoreactivity in the medial preoptic area (mPOA), a region sensitive to vaginocervical stimulation.

Rats with sexual experience spent a greater time with male under oil than naïve and VCS rats and had a shorter latency to enter the male compartment under EB/P than naïve rats.

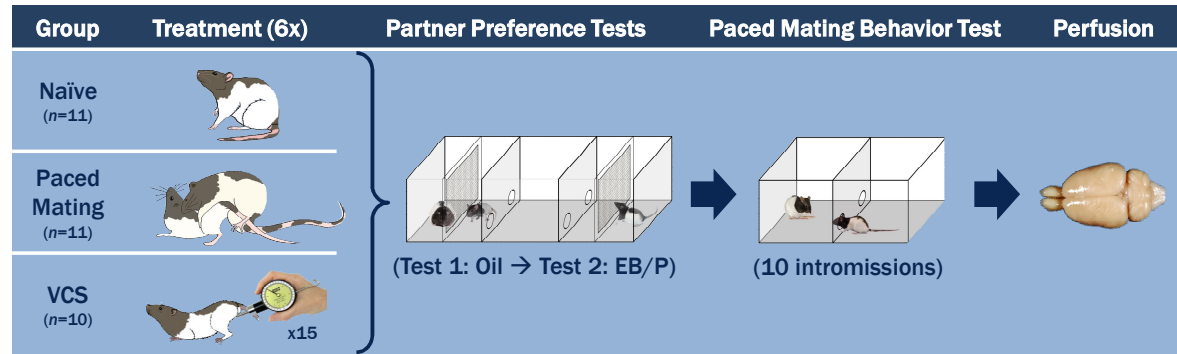


In a test of paced mating behavior, sexually experienced rats spent a greater proportion of time with male rat than naïve rats and exhibited more proceptive behaviors in the male rat compartment than naïve and VCS rats.

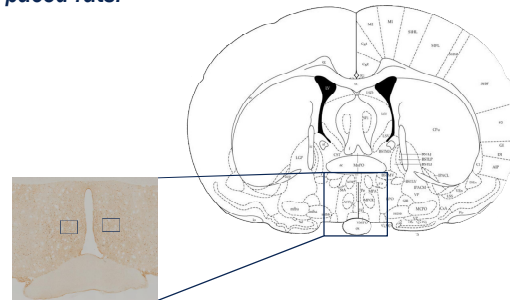


	Naïve	Paced Mating	VCS
Mount	26.5 ± 19.7	15.9 ± 10.1	16.7 ± 11.3
Contact-Return Latency	59.5 ± 43.8	22.2 ± 12.4*	68.3 ± 55.0
Intromission			
Ejaculation	44.2 ± 28.7	84.5 ± 52.6	131.3 ± 110.9
Latency to First Entry	11.5 ± 11.9	2.9 ± 2.0*	33.1 ± 64.7

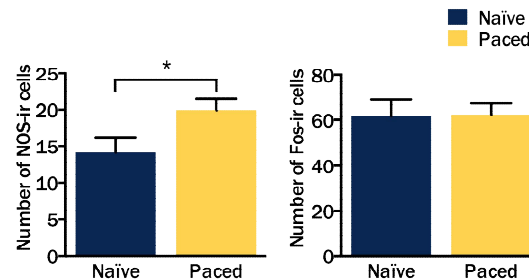
## Methods



Nitric oxide synthase (NOS) and Fos immunoreactivity were assessed bilaterally in the mPOA of naïve and paced rats.



A significantly greater number of NOS-ir cells was observed in the mPOA of paced vs. naïve rats, but Fos-ir did not differ between groups.



## Conclusions

Motivation to approach an inaccessible sexual partner is comparable under EB/P for sexually experienced, naïve, and VCS female rats.

The neural changes that occur after sexual experience, specifically the increased NOS in mPOA, may be related to the different responses to sexual stimulation during paced mating in sexually experienced relative to naïve and VCS rats.

The elevated preference for male suggests the male rat maintains incentive value for sexually experienced female rats when they are not hormone primed.

Vaginocervical stimulation alone cannot explain the behavioral changes in sexually experienced rats, indicating that VCS is not the primary feature of mating that alters subsequent behavior.

Future studies should explore whether associative learning, independent of proximate hormonal effects, can explain the increased motivation observed in rats with sexual experience.

## Acknowledgements

We thank Helen K. Strnad, Leigh Dairaghi, Sophie Guterl, Nimita Iyer, Noah Mason, Tanner McNamara, and Alyssa Puritz for help with collection of behavioral data.