## Supplemental Information for:

Reevaluation of the link between neuropsychiatric disorders and dysregulated adult neurogenesis

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## Companion to Table 2:

Supplementary Table 1. Causative studies: inducible primary or direct change in dentate gyrus (DG) neurogenesis or DG activity as it relates to DG functional output relevant to **neuropsychiatric disorders.** Table 2 in the main text provides an overview of this topic, while this Supplemental Table 1 provides the detailed explanation of each publication referred to in Table 2. References cited target and manipulate new DG neurons or DG activity in adult rats or mice, and assess a DG function (memory, mood, pattern separation, reward) relevant to neuropsychiatric disorders<sup>1–21</sup>. Publications were included if they used an approach to inducibly or directly change new neuron number, structure, or activity, or DG activity and included a behavioral outcome measure relevant to DG function or neuropsychiatric disorders (memory, mood, pattern separation, reward). Publications that ablated new neurons (e.g. via cranial irradiation, antimitotic agents, inducible transgenic-mediated depletion of new neurons) were not included here unless they examined an understudied DG function or novel new neuron function (e.g. reward, strength of memory) or utilized circuitry to drive new neurons (e.g. Ent cortical stimulation). Publications were also not included if they lacked a behavioral outcome or if the method to manipulate neurogenesis has altered neurogenesis as only one of its known consequences (e.g. running, pharmaceutical agents). This table is comprehensive in regard to optogenetic manipulations of new neurons and neuropsychiatric disorders, but not comprehensive in regard to more classical ablation studies. One major behavioral outcome of each publication is presented per row, along with the type of manipulation: approach to disrupt or inhibit, or enhance or stimulate. "Disrupt" or "enhance" are used for inducible transgenic or

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ablation studies, while "inhibit" or "stimulate" are used for optogenetic studies. Animal model and intervention (if appropriate) are also listed. Behavioral data are generalized for the purposes of presentation to fall into one of the four categories (memory, mood, pattern separation, reward) when many tests could be classified in more than one of these categories. For example, many contextual fear paradigms involve context discrimination, which can be considered a type of pattern separation. The terms the authors used to describe their data were utilized where possible. Data from publications were not presented in table if the particular data did not involve manipulation of new DG neurons or DG activity, or if were not performed in adult rodents. Outcomes (influence on DG function) are grouped by main DG function (memory in pink, mood in blue, pattern separation in peach, reward in green), then by publication year, and first author name. Influence on DG function for memory and pattern separation outcomes are given as enhanced, impaired, or nc (not changed). Influence on DG function for mood- and reward-related outcomes are given as increased, decreased, normalized, or nc. Note the influence on DG function is presented relative to the control group that did not have the new neuron or DG manipulation, even if the authors did not provide direct statistical report on this comparison. Therefore, readers are encouraged to review the relevant figures from each publication and come to their own conclusion. To aid the reader in this, figure and figure panels are provided for each outcome. Citation and reference are provided for each result. Reference list appears below Supplemental Table 2 legend. CORT corticosterone, DG dentate gyrus, Ent entorhinal cortex, nc not changed, ng neurogenesis, self-admin self-administration, - not examined.

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Disrupt or inhibit via	ons or DG Enhance or stimulate via	- Cells targeted	Animal model	Intervention	DG function	Paradigm used	Influence on DG function	Figure	Publicatio (Ref # in Supple Informatio
MEMORY									
Targeted irradiation	-		-	-	acquisition	contextual fear	nc	Fig. 2, 4	
Targeted irradiation	-	proliferating cells in DG,	-	-	acquisition	contextual fear	impaired	Fig. 3B	Drew et al. 20
Targeted irradiation	-	adjacent tissue		stronger learning acquisition contextual	contextual fear	normalized Fig. 5	1		
Inducible transgenic	-			paradigm posttraining ablation of	retrieval	contextual fear	impaired	Fig. 7A-G	
Inducible transgenic		-	-	ng pretraining ablation of ng	retrieval	contextual fear	impaired	Fig. 8	
Inducible transgenic	-	stem/proliferating neural		posttraining ablation of	retrieval	conditioned taste	nc	Fig. 7H	Arruda-Carvalho
Inducible transgenic	-	precursors in DG		ng posttraining ablation of	retrieval	aversion water maze	impaired	Fig. 9B, K	2011 (2)
Inducible transgenic	-	-	-	ng pretraining ablation of ng	retrieval	water maze	nc	Fig. 9H	
Inducible transgenic	-	-	-	posttraining ablation of ng	retrieval	visual discrimination water maze	impaired	Fig. 10G-H	
-	Inducible transgenic		-	-	acquisition	contextual fear	nc	Fig. 2A-B, Supp Fig. 13	
-	Inducible transgenic		-	-	acquisition	novel object exploration	nc	Supp Fig. 10	
-	Indusible transgopie	-	-		acquisition			Supp Eig. 11P	
-	Inducible transgenic	-	-	-	acquisition	water maze	nc	Supp Fig. 11B	
-	Inducible transgenic	stem/proliferating neural	-		retrieval	water maze	nc	Supp Fig. 11C	Sahay et al., 201
-	Inducible transgenic	precursors in DG			cognitive flexibility	water maze (reversal)	nc	Supp Fig. 11D	
-	Inducible transgenic		-	-	cognitive flexibility	contextual active	nc	Supp Fig. 12	
	-	-				avoidance			
-	Inducible transgenic		-	-	extinction	contextual fear	nc	Supp Fig. 16	
-	Inducible transgenic		-	posttraining enhancement of ng	retrieval	contextual fear	nc	Supp Fig. 17	
Antimitotic agent			-	-	acquisition	water maze	nc	Fig. 9E	
Antimitotic agent	-	proliferating cells throughout	-	Ent stimulation	acquisition	water maze	nc	Fig. 9E	
Antimitotic agent	-	proliferating cells throughout body			retrieval	water maze	impaired	Fig. 9E Fig. 9G	Stone et al. 201
Antimitotic agent	-		-	Ent stimulation	retrieval	water maze	nc	Fig. 9G	
Retrovirus,								Fig.3B, Supp	
optogenetics	-		-	•	acquisition	water maze	nc	Fig. 7	
Retrovirus, optogenetics	-	proliferating cells in dorsal DG	-	-	retrieval	water maze	impaired	Fig. 3E, 5E, 6A	Gu et al. 2012
Retrovirus,	-	1 50			retrieval	contextual fear	impaired	Fig. 4B-C, 6B	
optogenetics		stem/proliferating neural				novel object	-	-	
Inducible transgenic	-	precursors in DG	-	-	acquisition	exploration	impaired	Fig. 4B-C	Kheirbek et al. 20
Optogenetics	-		-	-	acquisition	contextual fear	impaired	Fig. 3B	
Optogenetics	-	in the second second is	-	-	retrieval	contextual fear	nc	Fig. 3C	1
-	Optogenetics	mature granule neurons in dorsal DG	-		acquisition	contextual fear	impaired	Fig. 5B, Supp	
		-						Fig. 5B Fig. 5B, Supp	
-	Optogenetics		-		retrieval	contextual fear	impaired	Fig. 5B-C	
Optogenetics	-		-	-	acquisition	contextual fear	nc	Fig. 3E	
Optogenetics	-	mature granule neurons in	-	-	retrieval	contextual fear	nc	Fig. 3E	
-	Optogenetics	ventral DG	-	-	acquisition	contextual fear	nc	Fig. 5D	Kheirbek et al. 20
-	Optogenetics		-	-	retrieval	contextual fear	nc	Fig. 5D	
-	Optogenetics	mature granule neurons in	-	-	acquisition	contextual fear	impaired	Supp Fig. 5F	
-	Optogenetics	intermediate DG	-	-	retrieval	contextual fear	impaired	Supp Fig. 5G	
Optogenetics	-			-	acquisition	contextual active avoidance	nc	Supp Fig. 4B	-
Optogenetics	-	mature granule neurons in dorsal DG		-	retrieval	contextual active	enhanced	Supp Fig. 4F	
		dorsal DG				avoidance contextual active			
Optogenetics	-		-	-	cognitive flexibility	avoidance	impaired	Fig. 4D-E	
Inducible transgenic	-	stem/proliferating neural precursors in DG	-	-	retrieval	contextual fear	nc	Fig. 3C	
Inducible transgenic	-	stem/proliferating neural		access to running wheel	retrieval	contextual fear	enhanced	Fig. 3C	Akers et al., 2014 *note manipulation performed post-lea
•		precursors in DG stem/proliferating neural							
Inducible transgenic	-	precursors in DG	-	-	retrieval	contextual fear	nc	Fig. 3G	
Inducible transgenic	-	stem/proliferating neural precursors in DG	-	neurogenic compound	retrieval	contextual fear	enhanced	Fig. 3G	ponormou post-le
	Inducible transports	stem/proliferating neural			retrieval	contextual fear	impoired		
-	Inducible transgenic	precursors in DG	-	-		contextual tear	impaired	Fig. 3L	
Inducible transgenic, optogenetics	-	mature granule neurons in	-	-	retrieval	contextual fear	impaired	Fig. 5F-G	
Inducible transgenic, optogenetics	-	the dorsal DG active during initial memory trace	-	train in different context	retrieval	contextual fear	nc	Fig. 5K-L	
Targeted irradiation	-	proliferating cells in DG,	-		retrieval	contextual fear	impaired	Fig. 6B	Denny et al. 201
Targeted irradiation	-	adjacent tissue	_	stronger learning	retrieval	contextual fear	nc	Fig. 6B	
-			-	paradigm					
Inducible transgenic	-		-	-	acquisition	contextual fear (delay)	impaired	Fig. 5B	
Inducible transgenic	-		-	-	acquisition	contextual fear (trace)	enhanced	Fig. 5C	
Inducible transgenic	-		-	-	retrieval (context)	contextual fear (delay)	nc	Fig. 5D	
		proliferating and differentiating new neurons						-	
	-	amoronialing new neurons	-	-	retrieval (context)	contextual fear (trace)	impaired	Fig. 5E	
Inducible transgenic			-	-	retrieval (tone)	contextual fear (delay)	nc	Fig. 5F	
Inducible transgenic Inducible transgenic	-	4							Constant of the
Inducible transgenic		-		-	retrieval (tone)	contextual fear (trace)	nc	Fig. 5G	Seo et al. 2015
*	-		-		metalescel (terms)	1	nc	Fig. 8D-E	
Inducible transgenic			-		retrieval (tone)	contextual fear (delay)			
Inducible transgenic Inducible transgenic Targeted irradiation	-			-			nc	Fig. 8D-E	
Inducible transgenic Inducible transgenic Targeted irradiation Targeted irradiation	-	proliferating cells in DG and adjacent tissue	-	-	retrieval (tone)	contextual fear (trace)		Fig. 8D-E	
Inducible transgenic Inducible transgenic Targeted irradiation	-	proliferating cells in DG and adjacent tissue	-				nc nc	Fig. 8D-E Fig. 8F	
Inducible transgenic Inducible transgenic Targeted irradiation Targeted irradiation	-		-	-	retrieval (tone)	contextual fear (trace)			
Inducible transgenic Inducible transgenic Targeted irradiation Targeted irradiation Targeted irradiation	-	adjacent tissue	-	-	retrieval (tone) retrieval (context)	contextual fear (trace) contextual fear (delay) contextual fear (trace) alternate trace fear-	nc	Fig. 8F	
Inducible transgenic Inducible transgenic Targeted irradiation Targeted irradiation Targeted irradiation Targeted irradiation Inducible transgenic Inducible transgenic,		adjacent tissue	- - -	- - -	retrieval (tone) retrieval (context) retrieval (context) retrieval (context)	contextual fear (trace) contextual fear (delay) contextual fear (trace) alternate trace fear- conditioning	nc enhanced impaired	Fig. 8F Fig. 8F Fig. 12A-J	
Inducible transgenic Inducible transgenic Targeted irradiation Targeted irradiation Targeted irradiation Inducible transgenic		adjacent tissue	- - - - -		retrieval (tone) retrieval (context) retrieval (context) retrieval (context) acquisition	contextual fear (trace) contextual fear (delay) contextual fear (trace) alternate trace fear- conditioning contextual fear	nc enhanced	Fig. 8F Fig. 8F Fig. 12A-J Fig. 6B	
Inducible transgenic Inducible transgenic Targeted irradiation Targeted irradiation Targeted irradiation Targeted irradiation Inducible transgenic Inducible transgenic,	- - - - - - - - - - - - - - - - - -	adjacent tissue proliferating and differentiating new neurons	- - -	- - -	retrieval (tone) retrieval (context) retrieval (context) retrieval (context)	contextual fear (trace) contextual fear (delay) contextual fear (trace) alternate trace fear- conditioning	nc enhanced impaired	Fig. 8F Fig. 8F Fig. 12A-J	
Inducible transgenic Inducible transgenic Targeted irradiation Targeted irradiation Targeted irradiation Targeted irradiation Inducible transgenic Inducible transgenic,		adjacent tissue proliferating and differentiating new neurons stem/proliferating neural	- - - - - - - - - - - - - -		retrieval (tone) retrieval (context) retrieval (context) retrieval (context) acquisition	contextual fear (trace) contextual fear (delay) contextual fear (trace) alternate trace fear- conditioning contextual fear	nc enhanced impaired impaired	Fig. 8F Fig. 8F Fig. 12A-J Fig. 6B	Danielson et al. 20
Inducible transgenic Inducible transgenic Targeted irradiation Targeted irradiation Targeted irradiation Targeted irradiation Inducible transgenic, optogenetics	- - - - - - - - - - - - - - - - - -	adjacent tissue proliferating and differentiating new neurons	- - - - - -	- - - - -	retrieval (tone) retrieval (context) retrieval (context) acquisition acquisition retrieval acquisition	contextual fear (trace) contextual fear (delay) contextual fear (trace) alternate trace fear- conditioning contextual fear contextual fear contextual fear contextual fear	nc enhanced impaired impaired impaired	Fig. 8F Fig. 8F Fig. 12A-J Fig. 6B Supp Fig. 6B Supp Fig. 6B Supp Table 1	Danielson et al. 20
Inducible transgenic Inducible transgenic Targeted irradiation Targeted irradiation Targeted irradiation Inducible transgenic Inducible transgenic, optogenetics - -	- - - - - - - - - - - - - - - - - -	adjacent tissue proliferating and differentiating new neurons stem/proliferating neural		- - - - - - - - - - - - - -	retrieval (tone) retrieval (context) retrieval (context) retrieval (context) acquisition acquisition retrieval	contextual fear (trace) contextual fear (delay) contextual fear (trace) alternate trace fear- conditioning contextual fear contextual fear contextual fear	nc enhanced impaired impaired impaired impaired	Fig. 8F Fig. 8F Fig. 12A-J Fig. 6B Supp Fig. 6B Supp Fig. 6B	Danielson et al. 20
Inducible transgenic Inducible transgenic Targeted irradiation Targeted irradiation Targeted irradiation Targeted irradiation Inducible transgenic, optogenetics	- - - - - - - - - - - - - - - - - -	adjacent tissue proliferating and differentiating new neurons stem/proliferating neural	- - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - -	retrieval (tone) retrieval (context) retrieval (context) acquisition acquisition retrieval acquisition	contextual fear (trace) contextual fear (delay) contextual fear (trace) alternate trace fear- conditioning contextual fear contextual fear contextual fear contextual fear	nc enhanced impaired impaired impaired impaired nc	Fig. 8F Fig. 8F Fig. 12A-J Fig. 6B Supp Fig. 6B Supp Fig. 6B Supp Table 1	Danielson et al. 20

-	Inducible transgenic	-	-	-	acquisition	water maze	nc	Fig. 6B	
-	Inducible transgenic	-	-	-	retrieval	water maze	nc	Fig. 6C	
-	Inducible transgenic		-	-	acquisition	water maze (reversal)	nc	Fig. 6D	
	Inducible transgenic	mature granule neurons in	-	-	cognitive flexibility (sub threshold	water maze (reversal)	enhanced	Fig. 6E	McAvoy et al. 2016 (11
		DG			training)				
-	Inducible transgenic	-	-	-	cognitive flexibility	water maze (reversal)	nc	Fig. 6F	
-	Inducible transgenic		-	-	acquisition	contextual fear novel object	nc	Fig. 6K-L	
-	Inducible transgenic		-	-	retrieval	recognition	enhanced	Supp Fig. 5F	
MOOD									
Targeted irradiation	-		-	-	anxiety	novelty suppressed feeding	nc	Fig. 5A	
Targeted irradiation	-		-	antidepressant	anxiety	novelty suppressed	increased	Fig. 5A	
Targeted irradiation		proliferating cells in DG, adjacent tissue		medication antidepressant	stress-induced	feeding coat state	increased	Fig. 5C	Santarellli et al. 2003
		-	stress (chronic)	medication antidepressant	despair stress-induced				
Targeted irradiation	-			medication	despair	grooming test	increased	Fig. 5D	
Targeted irradiation	-	proliferating cells in DG,	-	-	despair	forced swim test	nc	Fig. 4E, Supp Fig. 10	Airan, Meltzer et al. 2
Targeted irradiation	-	adjacent tissue		antidepressant	despair	forced swim test	increased	Fig. 4E, Supp	(13)
Targeted irradiation	-		-	medication	despair	coat state	nc	Fig. 10 Fig. 2A	
Targeted irradiation		-	stress (chronic)		stress-induced	coat state	nc	Fig. 2A	
-	-		areas (cirionic)	-	despair			-	
Targeted irradiation	-		-		despair stress-induced	grooming test	nc	Fig. 2B	
Targeted irradiation	-		stress (chronic)	-	despair	coat state	nc	Fig. 2B	
Targeted irradiation	-	proliferating cells in DG, adjacent tissue	-	- - antidepressant	despair	novelty suppressed feeding	nc	Fig. 2C	Surget et al. 2008 (
Targeted irradiation	-	adjacent tissue			stress-induced despair	novelty suppressed feeding	nc	Fig. 2C	
Targeted irradiation	-				stress-induced	coat state	increased	Fig. 3A, 4A	
			stress (chronic)	medication antidepressant	despair stress-induced				
Targeted irradiation	-			medication	despair	splash test	increased	Fig. 3B, 4B	
Targeted irradiation	-			antidepressant medication	stress-induced despair	novelty suppressed feeding	increased	Fig. 3C	
Inducible transgenic	-	stem/proliferating neural precursors in DG	-	-	stress-induced despair	forced swim test	nc	Fig. 6B	Arruda-Carvalho et 2011 (2)
Inducible transgenic	-	stem/proliferating neural precursors in DG	-	-	anxiety	open field	nc	Fig. 6C-D	
	Inducible transgenic	stem/proliferating neural precursors in DG	-	-	anxiety	open field	nc	Fig. 3A-B, Supp Fig. 18A	
	Inducible transgenie	stem/proliferating neural		access to supping wheel	anviaty	onon fold	deereeed	Fig. 4C	
-	Inducible transgenic	precursors in DG stem/proliferating neural	-	access to running wheel	anxiety	open field novelty suppressed	decreased	Fig. 4C	
-	Inducible transgenic	precursors in DG	-	-	anxiety	feeding	nc	Fig. 3C	
	Inducible transgenic	stem/proliferating neural precursors in DG		access to running wheel	anxiety	novelty suppressed feeding	nc	Supp Fig. 21B	
-	Inducible transgenic	stem/proliferating neural	_		stress-induced	forced swim test	nc	Fig. 3D	Sahay et al., 2011 ()
		precursors in DG stem/proliferating neural			despair stress-induced				Canay or any 2011 (
-	Inducible transgenic	precursors in DG	-	access to running wheel	despair	forced swim test	nc	Supp Fig. 21C	
-	Inducible transgenic	stem/proliferating neural precursors in DG	-	-	anxiety	light /dark	nc	Supp Fig.18B	
-	Inducible transgenic	stem/proliferating neural precursors in DG	-	access to running wheel	anxiety	light /dark	nc	Supp Fig. 21A	
-	Inducible transgenic	stem/proliferating neural	-		anxiety	elevated plus maze	nc	Supp Fig.18C	
-	-	precursors in DG stem/proliferating neural	-	-		,	-		
-	Inducible transgenic	precursors in DG	-	access to running wheel	anxiety	homecage	nc	Supp Fig. 21D	
Inducible transgenic	-		-	-	anxiety	novelty suppressed feeding	nc	Fig. 4A-B	
Inducible transgenic	-		stress (acute)		anxiety	novelty suppressed	increased	Fig. 4A-B	
Inducible transgenic		stem/proliferating neural			despair	feeding forced swim test	increased	Fig. 4C-D	
Inducible transgenic	-	precursors in DG	stress (acute)	-	stress-induced	forced swim test	nc	Fig. 4C-D	Snyder et al. 2011 (
-		-			despair		-	-	
Inducible transgenic	-		-	-	anxiety	elevated plus maze	nc	Supp Fig. 7	
Inducible transgenic	-		stress (acute)	-	anxiety	elevated plus maze	nc	Supp Fig. 7	
Targeted irradiation Targeted irradiation	-	proliferating cells in DG,	-	-	anxiety anxiety	cookie test cookie test	nc	Fig. 2B	
		adjacent tissue	stress (chronic)	- antidepressant	-		-	Fig. 2B	Surget et al. 2011 (
Targeted irradiation	-			medication	anxiety	cookie test	increased	Fig. 2B	
Inducible transgenic	-	-	-	-	anxiety	open field	nc	Fig. 3A-F	
Inducible transgenic	-	stem/proliferating neural	-	-	anxiety	elevated plus maze novelty suppressed	nc	Fig. 3H	Kheirbek et al. 2012
Inducible transgenic	-	precursors in DG	-	-	anxiety	feeding	nc	Fig. 3I-K	
Inducible transgenic	-		-	-	stress-induced despair	forced swim test	nc	Fig. 3G	
-	Optogenetics		-	-	anxiety	elevated plus maze	decreased	Fig. 6C-E	
-	Optogenetics		-		anxiety	open field	decreased	Fig. 6F-H	
-	Optogenetics	mature granule neurons in	-	dopamine DA receptor	anxiety	open field	normalized	Supp Fig. 6E	
Optogenetics	-	dorsal DG	-	antagonist -	anxiety	elevated plus maze	nc	Supp Fig. 6A	
Optogenetics	-		-	-	anxiety	open field	nc	Supp Fig. 6A	
Optogenetics	-		-	-	anxiety	homecage	nc	Supp Fig. 6A	
Optogenetics	-	mature granule neurons in	-	-	anxiety	elevated plus maze	nc	Supp Fig. 6B	
Optogenetics	-	intermediate DG	-	-	anxiety	open field	nc	Supp Fig. 6B	
-	Optogenetics	mature granule neurons in	-	-	anxiety	novel object	nc	Supp Fig. 6D	Kheirbek et al. 2013
-	Optogenetics	dorsal DG	-		anxiety	social interaction	nc	Supp Fig. 6D	
•	Optogenetics		-	-	anxiety	home in novel room	decreased	Supp Fig. 6F	
	Optogenetics Optogenetics	mature granule neurons in ventral DG	-	-	anxiety	elevated plus maze open field	decreased	Fig. 6J-L Fig. 6M-O	
	Optogenetics Optogenetics		-	-	anxiety anxiety	open field elevated plus maze	decreased decreased	Fig. 6M-O Fig. 6G	
· ·		mature granule neurons in intermediate DG	-	-	anxiety	open field	decreased	Fig. 6G Fig. 6G	
•				-	anxiety	elevated plus maze	nc	Supp Fig. 6C	
•	Optogenetics	mature grapula courses i						Supp Fig. 6C	
- - Optogenetics		mature granule neurons in ventral DG			anxiety	open neid	nc		
•	Optogenetics -	mature granule neurons in ventral DG	-	-	anxiety anxiety	open field light /dark	nc	Fig. 3C-D	
- Optogenetics Optogenetics Inducible transgenic	Optogenetics - -	mature granule neurons in ventral DG	-	-	anxiety	light /dark	nc	Fig. 3C-D	
- Optogenetics Optogenetics Inducible transgenic Inducible transgenic	Optogenetics - - - -	mature granule neurons in ventral DG		-	anxiety stress-induced anxiety	light /dark light /dark	nc nc	Fig. 3C-D Fig. 3C-D	
- Optogenetics Optogenetics Inducible transgenic Inducible transgenic Inducible transgenic	Optogenetics	mature granule neurons in ventral DG	- - stress (chronic) -	-	anxiety stress-induced anxiety anxiety	light /dark light /dark elevated zero maze	nc nc nc	Fig. 3C-D Fig. 3C-D Fig. 3E	
- Optogenetics Optogenetics Inducible transgenic Inducible transgenic Inducible transgenic	Optogenetics	mature granule neurons in ventral DG	-	-	anxiety stress-induced anxiety anxiety stress-induced anxiety	light /dark light /dark elevated zero maze elevated zero maze	nc nc nc nc	Fig. 3C-D Fig. 3C-D Fig. 3E Fig. 3E	
- Optogenetics Optogenetics Inducible transgenic Inducible transgenic Inducible transgenic	Optogenetics	mature granule neurons in ventral DG	- - stress (chronic) -	-	anxiety stress-induced anxiety anxiety	light /dark light /dark elevated zero maze	nc nc nc	Fig. 3C-D Fig. 3C-D Fig. 3E	

Inducible transgenic Inducible transgenic	-		-	-	anxiety	social interaction	nc	Fig. 3G	
	-	-		-	stress-induced anxiety	social interaction	nc	Fig. 3G	
Inducible transgenic	-	stem/proliferating neural			stress-induced anxiety	light /dark	nc	Fig. 4B-C	Laborana at al. 2012 (1
-		precursors in DG		-		-		-	Lehmann et al. 2013 (1
Inducible transgenic	-	_		adrenalectomy	stress-induced anxiety	light /dark	increased	Fig. 4B-C	
Inducible transgenic	-		stress (chronic)	-	stress-induced anxiety	elevated zero maze	nc	Fig. 4D	
Inducible transgenic	-			adrenalectomy	stress-induced anxiety	elevated zero maze	increased Fig. 4D	Fig. 4D	
Inducible transgenic	-			-	stress-induced despair stress-induced	forced swim test	nc	Fig. 4E	
	-	-		adronalostomy		forced swim test	increased		
Inducible transgenic	-	-		adrenalectomy	despair		increased	Fig. 4E	
Inducible transgenic	-			-	stress-induced anxiety	social interaction	nc	Fig. 4F	
Inducible transgenic	-			adrenalectomy	stress-induced anxiety	social interaction	increased	Fig. 4F	
-	Inducible transgenic		-	-	anxiety	open field	nc	Fig. 1e	
-	Inducible transgenic		CORT treatment		anxiety	open field	nc	Fig. 4b	
-	Inducible transgenic	stem/proliferating neural	-	-	anxiety	elevated plus maze	nc	Fig. 1f, 4c	Hill et al. 2015 (19
-	Inducible transgenic	precursors in DG	CORT treatment	-	anxiety	elevated plus maze	decreased*	Fig. 4c	*relative to CORT o group
-	Inducible transgenic		-	-	stress-induced despair	tail suspension test	nc	Fig. 1g, 4d	
-	Inducible transgenic		CORT treatment	-	stress-induced despair	tail suspension test	decreased*	Fig. 4d	
Inducible transgenic	-		-	before memory testing	anxiety	open field	nc	Fig. 10A-D	
Inducible transgenic	-	proliferating and	-	after memory testing	anxiety	open field	increased	Fig. 10E-H	Seo et al. 2015 (9
Inducible transgenic	-	differentiating new neurons	-	before memory testing	anxiety	elevated plus maze	vated plus maze nc	Fig. 11	3e0 et al. 2013 (9
Inducible transgenic	-		-	after memory testing	anxiety	elevated plus maze	increased	Fig. 11	
Targeted irradiation	-	proliferating cells in DG, adjacent tissue	stress (chronic)	neurogenic compound	stress-induced anxiety	social interaction	increased*	Fig. 4E-F	Walker et al. 2015 ( *after social defeat st
Inducible transgenic,	-		-	-	anxiety	open field			
optogenetics Inducible transgenic,		-							
optogenetics	-	stem/proliferating neural	-	-	anxiety anxiety anxiety	elevated plus maze	-		
-	Inducible transgenic, optogenetics	precursors in dorsal DG	-	-		open field			
-	Inducible transgenic,		-	-		elevated plus maze			
Inducible transgenic,	optogenetics					nc	Supp Table 1	Danielson et al. 2016 (1	
optogenetics	-	-	-	-	anxiety	open field			
Inducible transgenic, optogenetics	-	stem/proliferating neural	-	-	anxiety	elevated plus maze			
-	Inducible transgenic, optogenetics	precursors in ventral DG	-	-	anxiety	open field			
-	Inducible transgenic,	-	-	-	anxiety	elevated plus maze			
-	optogenetics		-	-	-			0	
-	Inducible transgenic Inducible transgenic	-	-	-	anxiety anxiety	open field light/dark		Supp Fig. 5B Supp Fig. 5C	
-	Inducible transgenic	mature granule neurons in DG	-	-	anxiety	elevated plus maze	nc	Supp Fig. 5D	McAvoy et al. 2016 (11
	Inducible transgenic				stress-induced	forced swim test		Supp Fig. 5E	
DA	TTERN SEPAR				despair	iorood ominitoot		oupping. or	
	Inducible transgenic	stem/proliferating neural	1		pattern separation	contextual	enhanced	Fig. 2C-F,	
-		precursors in DG stem/proliferating neural	-	-		discrimination fear contextual		Supp Fig. 15 Supp Fig. 14C	Sahay et al., 2011 (2
Targeted irradiation	Inducible transgenic	precursors in DG	-	-	pattern separation	discrimination fear	impaired	G G	
Inducible transgenic	-	stem/proliferating neural precursors in DG	-	-	pattern separation	contextual discrimination fear	impaired	Fig. 4I-J	Kheirbek et al., 2012
Inducible transgenic,						contextual discrimination fear	nc	Fig. 6C	
optogenetics	-		-	-		(inhibited in shock-	nc		
						paired context)		1 ig. 00	
Inducible transgenic,						paired context) contextual		119.00	
optogenetics	-	stem/proliferating neural	-	-	nottern concretion	contextual discrimination fear (inhibited in unpaired	impaired	Fig. 6D	Danielson et al., 20 <sup>.</sup>
	-	stem/proliferating neural precursors in dorsal DG	-	-	pattern separation	contextual discrimination fear (inhibited in unpaired context)	impaired		Danielson et al., 20 (10)
optogenetics Inducible transgenic,	-	stem/proliferating neural precursors in dorsal DG	-		pattern separation	contextual discrimination fear (inhibited in unpaired context) contextual discrimination fear	impaired	Fig. 6D	
optogenetics Inducible transgenic, optogenetics	-	stem/proliferating neural precursors in dorsal DG		-	pattern separation	contextual discrimination fear (inhibited in unpaired context) contextual			
optogenetics Inducible transgenic, optogenetics Inducible transgenic,	-	stem/proliferating neural precursors in dorsal DG	-	•	pattern separation	contextual discrimination fear (inhibited in unpaired context) contextual discrimination fear (highly dissimilar context) contextual		Fig. 6D	
optogenetics Inducible transgenic, optogenetics	-	stem/proliferating neural precursors in dorsal DG	-	-	pattern separation	contextual discrimination fear (inhibited in unpaired context) contextual discrimination fear (highly dissimilar context) contextual discrimination fear	nc	Fig. 6D Supp Fig. 6C Supp Fig. 6D	
optogenetics Inducible transgenic, optogenetics Inducible transgenic,	- - Inducible transgenic	precursors in dorsal DG	-			contextual discrimination fear (inhibited in unpaired context) contextual discrimination fear (highly dissimilar context) contextual	nc	Fig. 6D Supp Fig. 6C	(10)
optogenetics Inducible transgenic, optogenetics Inducible transgenic, optogenetics -		stem/proliferating neural precursors in dorsal DG mature granule neurons in DG	-	-	pattern separation	contextual discrimination fear (inhibited in unpaired context) contextual discrimination fear (highly dissimilar contextual discrimination fear contextual fear contextual fear	nc nc enhanced	Fig. 6D Supp Fig. 6C Supp Fig. 6D Fig. 6L	(10)
optogenetics Inducible transgenic, optogenetics Inducible transgenic, optogenetics - Antimitotic agent	Inducible transgenic	mature granule neurons in	-	· · · · · · · · · · · · · · · · · · ·		contextual discrimination fear (inhibited in unpaired context) contextual discrimination fear (highly dissimilar contextual discrimination fear discrimination fear discrimination	nc	Fig. 6D Supp Fig. 6C Supp Fig. 6D	(10)
optogenetics Inducible transgenic, optogenetics Inducible transgenic, optogenetics - Antimitotic agent REWARD		mature granule neurons in	-	- - - -	pattern separation	contextual discrimination fear (inhibited in unpaired contextual discrimination fear (highly dissimilar contextual discrimination fear contextual fear discrimination contextual fear discrimination	nc nc enhanced	Fig. 6D Supp Fig. 6C Supp Fig. 6D Fig. 6L	(10)
optogenetics Inducible transgenic, optogenetics Inducible transgenic, optogenetics - Antimitotic agent		mature granule neurons in		· · ·	pattern separation	contextual discrimination fear (inhibited in unpaired context) contextual discrimination fear (highly dissimilar contextual discrimination fear contextual fear contextual fear	nc nc enhanced	Fig. 6D Supp Fig. 6C Supp Fig. 6D Fig. 6L	(10)
optogenetics Inducible transgenic, optogenetics inducible transgenic, optogenetics Antimitotic agent REWARD Targeted irradiation	Inducible transgenic	mature granule neurons in		· · ·	pattern separation acquisition of reward based operant learning	contextual discrimination fear (initibited in unpaired context) contextual discrimination fear (highly dissimilar contextual discrimination fear discrimination contextual fear discrimination contextual fear discrimination	nc nc enhanced normalized	Fig. 6D Supp Fig. 6C Supp Fig. 6L Fig. 6M	(10)
optogenetics Inducible transgenic, optogenetics Inducible transgenic, optogenetics Antimitotic agent REWARD Targeted irradiation Targeted irradiation	Inducible transgenic - -	mature granule neurons in	- - - - i.v. cocaine self-		pattern separation acquisition of reward based operant learning acquisition of self- administration	contextual discrimination fear (inhibited in unpaired contextual discrimination fear (highly dissimilar contextual discrimination fear discrimination fear discrimination contextual fear discrimination sucrose pellets i.v. cocaine	nc nc enhanced normalized nc increased	Fig. 6D Supp Fig. 6C Supp Fig. 6L Fig. 6L Fig. 3A, 5A Fig. 3B	(10)
optogenetics Inducible transgenic, optogenetics inducible transgenic, optogenetics Antimitotic agent REWARD Targeted irradiation	Inducible transgenic	mature granule neurons in	administration (post-	- - - - - - -	pattern separation acquisition of reward based operant learning acquisition of self-	contextual discrimination fear (inhibited in unpaired contextual discrimination fear (highly dissimilar contextual discrimination fear discrimination fear discrimination contextual fear discrimination sucrose pellets i.v. cocaine dose response, intake of i.v. cocaine	nc nc enhanced normalized	Fig. 6D Supp Fig. 6C Supp Fig. 6L Fig. 6M	(10)
optogenetics Inducible transgenic, optogenetics Inducible transgenic, optogenetics Antimitotic agent REWARD Targeted irradiation Targeted irradiation	Inducible transgenic - -	mature granule neurons in			pattern separation acquisition of reward based operant learning acquisition of self- administration sensitivity to reward motivation for reward	contextual discrimination fear (inhibited in unpaired contextual discrimination fear (highly dissimilar contextual discrimination fear contextual fear discrimination contextual fear discrimination discrimination	nc nc enhanced normalized nc increased	Fig. 6D Supp Fig. 6C Supp Fig. 6L Fig. 6L Fig. 3A, 5A Fig. 3B	(10)
optogenetics Inducible transgenic, optogenetics Inducible transgenic, optogenetics Antimitotic agent REWARD Targeted irradiation Targeted irradiation Targeted irradiation	Inducible transgenic	mature granule neurons in	administration (post-	-	pattern separation acquisition of reward based operant learning acquisition of self- administration sensitivity to reward motivation for reward acquisition of self-	contextual discrimination fear (inhibited in unpaired contextual discrimination fear (highly dissimilar contextual discrimination fear contextual fear discrimination contextual fear discrimination contextual fear discrimination sucrose pellets i.v. cocaine dose response, intake of i.v. cocaine progressive ratio for	nc nc enhanced normalized nc increased increased	Fig. 6D Supp Fig. 6C Supp Fig. 6C Fig. 6L Fig. 3A, 5A Fig. 38 Fig. 3C-D	(10)
optogenetics Inducible transgenic, optogenetics Inducible transgenic, optogenetics Antimitotic agent REWARD Targeted irradiation Targeted irradiation Targeted irradiation Targeted irradiation Targeted irradiation	Inducible transgenic	precursors in dorsal DG mature granule neurons in DG proliferating cells in DG,	administration (post-	-	pattern separation acquisition of reward based operant learning acquisition of self- administration sensitivity to reward motivation for reward acquisition reward acquisition result	contextual discrimination fear (inhibited in unpaired contextual discrimination fear (highly dissimilar contextual discrimination fear contextual fear discrimination contextual fear discrimination discr	nc nc enhanced normalized nc increased increased increased	Fig. 6D Supp Fig. 6C Supp Fig. 6C Fig. 6L Fig. 3A, 5A Fig. 3B Fig. 3C-D Fig. 3E Fig. 5C	(10) McAvoy et al., 2016
optogenetics Inducible transgenic, optogenetics Inducible transgenic, optogenetics Antimitotic agent REWARD Targeted irradiation	Inducible transgenic - - - - - - - - - - - - -	mature granule neurons in DG	administration (post- irradiation)	- - - -	pattern separation acquisition of reward based operant learning acquisition of self- administration sensitivity to reward acquisition of self- administration motivation for reward extinction of reward	contextual discrimination fear (initibited in unpaired context) contextual discrimination fear (scrimination fear contextual discrimination fear discrimination fear discrimination contextual fear discrimination discriminati	nc nc enhanced normalized nc increased increased increased nc nc	Fig. 6D           Supp Fig. 6C           Supp Fig. 6D           Fig. 6B           Fig. 6B           Fig. 3A, 5A           Fig. 3B           Fig. 3C-D           Fig. 5C           Fig. 5D-E	(10) McAvoy et al., 2016
optogenetics Inducible transgenic, optogenetics Inducible transgenic, optogenetics Antimitotic agent REWARD Targeted irradiation Targeted irradiation Targeted irradiation Targeted irradiation Targeted irradiation	Inducible transgenic	precursors in dorsal DG	administration (post- irradiation)	- - -	pattern separation acquisition of reward based operant learning acquisition of self- administration sensitivity to reward acquisition reward acquisition of self- administration motivation for reward extinction of reward learning	contextual discrimination fear (inhibited in unpaired context) contextual discrimination fear (highly dissimilar contextual discrimination tidiscrimination contextual fear discrimination contextual fear discrimination sucrose pellets i.v. cocaine progressive ratio for i.v. cocaine sucrose pellets sucrose pellets sucrose pellets sucrose pellets	nc nc enhanced normalized nc increased increased increased nc	Fig. 6D Supp Fig. 6C Supp Fig. 6C Fig. 6L Fig. 3A, 5A Fig. 3B Fig. 3C-D Fig. 3E Fig. 5C	(10) McAvoy et al., 2016
optogenetics Inducible transgenic, optogenetics Inducible transgenic, optogenetics Antimitotic agent REWARD Targeted irradiation	Inducible transgenic - - - - - - - - - - - - -	precursors in dorsal DG	administration (post- irradiation)	- - - -	acquisition of reward based operant learning acquisition of self- administration sensitivity to reward motivation for reward acquisition of self- administration motivation for reward extinction of reward learning reinstatement of	contextual discrimination fear (inhibited in unpaired context) contextual discrimination fear (highly dissimilar contextual discrimination tidiscrimination contextual fear discrimination contextual fear discrimination sucrose pellets i.v. cocaine progressive ratio for i.v. cocaine sucrose pellets sucrose pellets sucrose pellets sucrose pellets cocaine sucrose pellets cures pellets sucrose pellets cures pellets cures pellets cures pellets sucrose pellets cures pellets cures pellets cures pellets	nc nc enhanced normalized nc increased increased increased nc nc	Fig. 6D           Supp Fig. 6C           Supp Fig. 6D           Fig. 6B           Fig. 6B           Fig. 3A, 5A           Fig. 3B           Fig. 3C-D           Fig. 5C           Fig. 5D-E	(10) McAvoy et al., 2016
optogenetics Inducible transgenic, optogenetics (optogenetics) (nducible transgenic, optogenetics) (nducible transgenic, optogenetics) (nducible transgenic) (nducible transgeni	Inducible transgenic 	precursors in dorsal DG	administration (post- irradiation)	· · · ·	pattern separation based operant learning acquisition of self- administration sensitivity to reward acquisition of self- administration motivation for reward extinction of reward extinction of reward learning reinstatement of reward learning extinction of reward	contextual discrimination fear (inhibited in unpaired contextual discrimination fear (highly dissimilar contextual discrimination fear contextual fear discrimination contextual fear discrimination contextual fear discrimination sucrose pellets <i>i.v.</i> cocaine dose response, intake of <i>i.v.</i> cocaine dose response, intake of <i>i.v.</i> cocaine sucrose pellets progressive ratio for <i>i.v.</i> cocaine sucrose pellets sucrose pellets for sucrose pellets for sucrose pellets for sucrose pellets cue, sucrose pellets cue, sucrose pellets	nc nc enhanced normalized nc increased increased increased nc nc nc nc nc	Fig. 6D           Supp Fig. 6C           Supp Fig. 6L           Fig. 6L           Fig. 6L           Fig. 3A, 5A           Fig. 3C-D           Fig. 3E           Fig. 5C-           Fig. 5C-           Fig. 5G-           Fig. 5G-           Fig. 5G-	(10) McAvoy et al., 2016
optogenetics Inducible transgenic, optogenetics Inducible transgenic, optogenetics Antimitotic agent REWARD Targeted irradiation	Inducible transgenic - - - - - - - - - - - - -	precursors in dorsal DG	administration (post- irradiation) oral sucrose pellet self- administration	- - - -	pattern separation acquisition of reward based operant learning acquisition of self- administration sensitivity to reward acquisition of self- administration motivation for reward learning reinstatement of reward learning	contextual discrimination fear (inhibited in unpaired contextual discrimination fear (highly dissimilar contextual discrimination fear contextual fear discrimination contextual fear discrimination fear discrimination fear discrimination contextual fear discrimination fear sucrose pellets for sucrose pellets	nc nc enhanced normalized nc increased increased increased nc nc nc nc nc	Fig. 6D           Supp Fig. 6C           Supp Fig. 6L           Fig. 6L           Fig. 6A           Fig. 3A, 5A           Fig. 3B           Fig. 3C-D           Fig. 3C           Fig. 5D-E           Fig. 5D-E           Fig. 5D	(10) McAvoy et al., 2016
optogenetics Inducible transgenic, optogenetics Inducible transgenic, optogenetics Antimitotic agent REWARD Targeted irradiation	Inducible transgenic 	precursors in dorsal DG	administration (post- irradiation) oral sucrose pellet self administration	· · · ·	pattern separation     acquisition of reward     based operant     learning     acquisition of self-     administration     sensitivity to reward     acquisition of self-     administration     motivation for reward     learning     reinstatement of     reward learning     reinstatement of	contextual discrimination fear (inhibited in unpaired contextual discrimination fear (highly dissimilar contextual discrimination fear contextual fear discrimination contextual fear discrimination fear discrimination fear discrimination contextual fear discrimination fear discrimination i.v. cocaine discress pellets for sucrose pellet	nc nc enhanced normalized nc increased increased increased nc nc nc nc nc	Fig. 6D           Supp Fig. 6C           Supp Fig. 6L           Fig. 6L           Fig. 6L           Fig. 3A, 5A           Fig. 3C-D           Fig. 3E           Fig. 5C-           Fig. 5C-           Fig. 5G-           Fig. 5G-           Fig. 5G-	(10) McAvoy et al., 2016 (
optogenetics Inducible transgenic, optogenetics Inducible transgenic, optogenetics Antimitotic agent REWARD Targeted irradiation	Inducible transgenic 	precursors in dorsal DG	administration (post- irradiation) oral sucrose pellet self administration	· · · ·	pattern separation lacquisition of reward based operant learning acquisition of self- administration sensitivity to reward acquisition of self- administration motivation for reward learning reinstatement of reward learning extinction of reward learning	contextual discrimination fear (inhibited in unpaired context) contextual discrimination fear (context) contextual discrimination fear discrimination fear discrimination fear discrimination fear discrimination contextual fear discrimination dis	nc nc enhanced normalized nc increased increased increased increased nc inc nc nc nc nc nc	Fig. 6D           Supp Fig. 6C           Supp Fig. 6D           Fig. 6A           Fig. 6M           Fig. 3A, 5A           Fig. 3B           Fig. 3C-D           Fig. 5C           Fig. 5D-E           Fig. 5C           Fig. 5C	(10) McAvoy et al., 2016
optogenetics Inducible transgenic, optogenetics Inducible transgenic, optogenetics Antimitotic agent REWARD Targeted irradiation	Inducible transgenic 	precursors in dorsal DG	administration (post- irradiation) oral sucrose pellet self administration	· · · ·	pattern separation     acquisition of reward     based operant     learning     acquisition of self-     administration     sensitivity to reward     acquisition of self-     administration     motivation for reward     learning     reinstatement of     reward learning     reinstatement of	contextual discrimination fear (inhibited in unpaired context) contextual discrimination fear (highly dissimilar contextual discrimination fear contextual fear discrimination contextual fear discrimination fear sucrose pellets for sucrose pellet	nc nc enhanced normalized nc increased increased increased increased nc inc nc nc nc nc nc	Fig. 6D           Supp Fig. 6C           Supp Fig. 6D           Fig. 6A           Fig. 6M           Fig. 3A, 5A           Fig. 3B           Fig. 3C-D           Fig. 5C           Fig. 5D-E           Fig. 5C           Fig. 5C	(10) McAvoy et al., 2016 (
optogenetics Inducible transgenic, optogenetics Inducible transgenic, optogenetics Antimitotic agent REWARD Targeted irradiation	Inducible transgenic 	precursors in dorsal DG	administration (post- irradiation) oral sucrose pellet self administration	· · · ·	pattern separation     acquisition of reward     based operant     learning     acquisition of self-     administration     sensitivity to reward     acquisition of self-     administration     motivation for reward     learning     reinstatement of     reward learning     reinstatement of	contextual discrimination fear (inhibited in unpaired context) contextual discrimination fear (highly dissimilar contextual discrimination fear discrimination fear discrimination contextual fear discrimination contextual fear discrimination sucrose pellets i.v. cocaine forgressive ratio for i.v. cocaine progressive ratio for sucrose pellets progressive ratio for sucrose pellets progressive ratio for sucrose pellets comparison pellets comparison pellets for sucrose pellets for sucrose pellets for sucrose pellets for sucrose pellets cue, foothock, and cocaine for i.v. cocaine self- administration	nc enhanced normalized nc increased increased increased increased nc nc nc nc nc nc nc	Fig. 6D           Supp Fig. 6C           Supp Fig. 6D           Fig. 6B           Fig. 6L           Fig. 6M           Fig. 3A, 5A           Fig. 3B           Fig. 3C-D           Fig. 3C-D           Fig. 5C           Fig. 5D-E           Fig. 5D-E           Fig. 5B-C           Fig. 6B-C           Fig. 6D-F	(10) McAvoy et al., 2016 (
optogenetics Inducible transgenic, optogenetics Inducible transgenic, optogenetics Inducible transgenic, optogenetics Inducible transgenic, optogenetics Itargeted irradiation Itargeted Ita	Inducible transgenic 	precursors in dorsal DG mature granule neurons in DG proliferating cells in DG, adjacent tissue	administration (post- irradiation) oral sucrose pellet self administration	· · · ·	pattern separation     acquisition of reward     based operant     learning     acquisition of self-     administration     sensitivity to reward     acquisition of self-     administration     motivation for reward     learning     reinstatement of     reward learning     reinstatement of	contextual discrimination fear (initibited in unpaired context) contextual discrimination fear (highly dissimilar contextual discrimination fear contextual fear discrimination contextual fear progressive ratio for i.v. cocaine sucrose pellets sucrose pellets sucrose pellets cue, sucrose pellets cue, sucrose pellets cue, footshock, and cocaine self- administration sucrose preference, accute test	nc enhanced normalized nc increased increased increased increased nc nc nc nc nc nc nc	Fig. 6D           Supp Fig. 6C           Supp Fig. 6D           Fig. 6B           Fig. 6L           Fig. 6M           Fig. 3A, 5A           Fig. 3B           Fig. 3C-D           Fig. 3C-D           Fig. 5C           Fig. 5D-E           Fig. 5D-E           Fig. 5B-C           Fig. 6B-C           Fig. 6D-F	(10) McAvoy et al., 2016 (
optogenetics Inducible transgenic, optogenetics Inducible transgenic, optogenetics Inducible transgenic, optogenetics Inducible transgenic, optogenetics Itargeted irradiation Itargeted Ita	Inducible transgenic 	precursors in dorsal DG mature granule neurons in DG proliferating cells in DG,	administration (post- irradiation) oral sucrose pellet self administration i.v. cocaine self- administration (pre- irradiation) -	· · · ·	pattern separation     acquisition of reward     based operant     learning     acquisition of self-     administration     sensitivity to reward     acquisition of self-     administration     motivation for reward     learning     reinstatement of     reward learning     reinstatement of	contextual discrimination fear (inhibited in unpaired context) contextual discrimination fear (hiphy dissimilar contextual discrimination fear contextual fear discrimination contextual fear discrimination i.v. cocaine sucrose pellets for sucrose pellets duministration sucrose preference, acute test	nc enhanced normalized ncreased increased increased increased increased nc nc nc nc nc nc nc nc nc decreased	Fig. 6D           Supp Fig. 6C           Supp Fig. 6L           Fig. 6L           Fig. 6L           Fig. 3A, 5A           Fig. 3B           Fig. 3C-D           Fig. 3B           Fig. 3C-D           Fig. 3B           Fig. 3C-D           Fig. 3B           Fig. 3C-D           Fig. 5C-E           Fig. 5C-E           Fig. 5C-E           Fig. 6B-C           Fig. 6D-F           Fig. 4E	(10) McAvoy et al., 2016 ( Noonan et al., 2010 (2
optogenetics Inducible transgenic, optogenetics Inducible transgenic, optogenetics Antimitotic agent REWARD Targeted irradiation Inducible transgenic Inducible transgenic	Inducible transgenic 	precursors in dorsal DG mature granule neurons in DG proliferating cells in DG, adjacent tissue stem/proliferating neural	administration (post- irradiation) oral sucrose pellet self administration i.v. cocaine self- administration (pre- irradiation) -	· · · ·	pattern separation     acquisition of reward     based operant     learning     acquisition of self-     administration     sensitivity to reward     acquisition of self-     administration     motivation for reward     learning     reinstatement of     reward learning     extinction of reward     learning     reinstatement of     reward learning     reinstatement of     reward learning     reinstatement of     reward learning	contextual discrimination fear (initibited in unpaired context) contextual discrimination fear (highly dissimilar contextual discrimination fear contextual fear discrimination contextual fear progressive ratio for i.v. cocaine sucrose pellets sucrose pellets sucrose pellets cue, sucrose pellets cue, sucrose pellets cue, footshock, and cocaine self- administration sucrose preference, accute test	nc enhanced normalized ncreased increased increased increased increased nc nc nc nc nc nc nc nc nc decreased	Fig. 6D           Supp Fig. 6C           Supp Fig. 6L           Fig. 6L           Fig. 6L           Fig. 3A, 5A           Fig. 3B           Fig. 3C-D           Fig. 3B           Fig. 3C-D           Fig. 3B           Fig. 3C-D           Fig. 3B           Fig. 3C-D           Fig. 5C-E           Fig. 5C-E           Fig. 5C-E           Fig. 6B-C           Fig. 6D-F           Fig. 4E	(10) McAvoy et al., 2016 ( Noonan et al., 2010 (2
optogenetics Inducible transgenic, optogenetics Inducible transgenic, optogenetics Antimitotic agent REWARD Targeted irradiation	Inducible transgenic 	precursors in dorsal DG mature granule neurons in DG proliferating cells in DG, adjacent tissue stem/proliferating neural	administration (post- irradiation) oral sucrose pellet self administration i.v. cocaine self- administration (pre- irradiation) -	· · · ·	pattern separation     acquisition of reward     based operant     learning     acquisition of self-     administration     sensitivity to reward     acquisition of self-     administration     motivation for reward     learning     reinstatement of     reward learning     extinction of reward     learning     reinstatement of     reward learning     reinstatement of     reward learning     reinstatement of     reward learning	contextual discrimination fear (inhibited in unpaired context) contextual discrimination fear (highly dissimilar contextual discrimination fear discrimination contextual fear discrimination contextual fear discrimination sucrose pellets i.v. cocaine progressive ratio for i.v. cocaine progressive ratio for sucrose pellets for sucrose pellets sucrose perference, acute test	nc nc enhanced normalized increased increased increased increased nc nc nc nc nc decreased decreased	Fig. 6D           Supp Fig. 6C           Supp Fig. 6L           Fig. 6L           Fig. 6L           Fig. 3A, 5A           Fig. 3B           Fig. 3C-D           Fig. 3B           Fig. 3C-D           Fig. 3B           Fig. 3C-D           Fig. 3B           Fig. 5C-           Fig. 5D-E           Fig. 5B-E           Fig. 6B-C           Fig. 6D-F           Fig. 4E	Danielson et al., 201 (10) McAvoy et al., 2016 (1 Noonan et al., 2010 (2 Snyder et al., 2011 (1