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[1–21]. 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

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.

References cited in Supplemental Table 1

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Approach to manipulate new neurons or DG		Cells targeted	Animal model	Intervention	Behavioral assessment			Figure	Publication (Ref # in Supplemental Information)
Disrupt or inhibit via	Enhance or stimulate via				DG function	*Paradigm used*	Influence on DG function		
MEMORY									
Targeted irradiation	-	proliferating cells in DG, adjacent tissue	-	-	**acquisition**	*contextual fear*	**nc**	Fig. 2, 4	Drew et al. 2010 (1)
Targeted irradiation	-		-	-	**acquisition**	*contextual fear*	**impaired**	Fig. 3B	
Targeted irradiation	-		-	stronger learning paradigm	**acquisition**	*contextual fear*	**normalized**	Fig. 5	
Inducible transgenic	-	stem/proliferating neural precursors in DG	-	posttraining ablation of ng	**retrieval**	*contextual fear*	**impaired**	Fig. 7A-G	Arruda-Carvalho et al., 2011 (2)
Inducible transgenic	-		-	pretraining ablation of ng	**retrieval**	*contextual fear*	**impaired**	Fig. 8	
Inducible transgenic	-		-	posttraining ablation of ng	**retrieval**	*conditioned taste aversion*	**nc**	Fig. 7H	
Inducible transgenic	-		-	posttraining ablation of ng	**retrieval**	*water maze*	**impaired**	Fig. 9B, K	
Inducible transgenic	-		-	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	stem/proliferating neural precursors in DG	-	-	**acquisition**	*contextual fear*	**nc**	Fig. 2A-B, Supp Fig. 13	Sahay et al., 2011 (20)
-	Inducible transgenic		-	-	**acquisition**	*novel object exploration*	**nc**	Supp Fig. 10	
-	Inducible transgenic		-	-	**acquisition**	*water maze*	**nc**	Supp Fig. 11B	
-	Inducible transgenic		-	-	**retrieval**	*water maze*	**nc**	Supp Fig. 11C	
-	Inducible transgenic		-	-	**cognitive flexibility**	*water maze (reversal)*	**nc**	Supp Fig. 11D	
-	Inducible transgenic		-	-	**cognitive flexibility**	*contextual active avoidance*	**nc**	Supp Fig. 12	
-	Inducible transgenic		-	-	**extinction**	*contextual fear*	**nc**	Supp Fig. 16	
-	Inducible transgenic		-	posttraining enhancement of ng	**retrieval**	*contextual fear*	**nc**	Supp Fig. 17	
Antimitotic agent	-	proliferating cells throughout body	-	-	**acquisition**	*water maze*	**nc**	Fig. 9E	Stone et al. 2011 (3)
Antimitotic agent	-		-	Ent stimulation	**acquisition**	*water maze*	**nc**	Fig. 9E	
Antimitotic agent	-		-	-	**retrieval**	*water maze*	**impaired**	Fig. 9G	
Antimitotic agent	-		-	Ent stimulation	**retrieval**	*water maze*	**nc**	Fig. 9G	
Retrovirus, optogenetics	-	proliferating cells in dorsal DG	-	-	**acquisition**	*water maze*	**nc**	Fig.3B, Supp Fig. 7	Gu et al. 2012 (4)
Retrovirus, optogenetics	-		-	-	**retrieval**	*water maze*	**impaired**	Fig. 3E, 5E, 6A	
Retrovirus, optogenetics	-		-	-	**retrieval**	*contextual fear*	**impaired**	Fig. 4B-C, 6B	
Inducible transgenic	-	stem/proliferating neural precursors in DG	-	-	**acquisition**	*novel object exploration*	**impaired**	Fig. 4B-C	Kheirbek et al. 2012 (5)
Optogenetics	-	mature granule neurons in dorsal DG	-	-	**acquisition**	*contextual fear*	**impaired**	Fig. 3B	Kheirbek et al. 2013 (6)
Optogenetics	-		-	-	**retrieval**	*contextual fear*	**nc**	Fig. 3C	
-	Optogenetics		-	-	**acquisition**	*contextual fear*	**impaired**	Fig. 5B, Supp Fig. 5B	
-	Optogenetics		-	-	**retrieval**	*contextual fear*	**impaired**	Fig. 5B, Supp Fig. 5B-C	
Optogenetics	-	mature granule neurons in ventral DG	-	-	**acquisition**	*contextual fear*	**nc**	Fig. 3E	
Optogenetics	-		-	-	**retrieval**	*contextual fear*	**nc**	Fig. 3E	
-	Optogenetics		-	-	**acquisition**	*contextual fear*	**nc**	Fig. 5D	
-	Optogenetics		-	-	**retrieval**	*contextual fear*	**nc**	Fig. 5D	
-	Optogenetics	mature granule neurons in intermediate DG	-	-	**acquisition**	*contextual fear*	**impaired**	Supp Fig. 5F	
-	Optogenetics		-	-	**retrieval**	*contextual fear*	**impaired**	Supp Fig. 5G	
Optogenetics	-	mature granule neurons in dorsal DG	-	-	**acquisition**	*contextual active avoidance*	**nc**	Supp Fig. 4B	
Optogenetics	-		-	-	**retrieval**	*contextual active avoidance*	**enhanced**	Supp Fig. 4F	
Optogenetics	-		-	-	**cognitive flexibility**	*contextual active avoidance*	**impaired**	Fig. 4D-E	
Inducible transgenic	-	stem/proliferating neural precursors in DG	-	-	**retrieval**	*contextual fear*	**nc**	Fig. 3C	Akers et al., 2014 (8) *note manipulations performed post-learning
Inducible transgenic	-	stem/proliferating neural precursors in DG	-	access to running wheel	**retrieval**	*contextual fear*	**enhanced**	Fig. 3C	
Inducible transgenic	-	stem/proliferating neural 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	
-	Inducible transgenic	stem/proliferating neural precursors in DG	-	-	**retrieval**	*contextual fear*	**impaired**	Fig. 3L	
Inducible transgenic, optogenetics	-	mature granule neurons in the dorsal DG active during initial memory trace	-	-	**retrieval**	*contextual fear*	**impaired**	Fig. 5F-G	Denny et al. 2014 (7)
Inducible transgenic, optogenetics	-		-	train in different context	**retrieval**	*contextual fear*	**nc**	Fig. 5K-L	
Targeted irradiation	-	proliferating cells in DG, adjacent tissue	-	-	**retrieval**	*contextual fear*	**impaired**	Fig. 6B	
Targeted irradiation	-		-	stronger learning paradigm	**retrieval**	*contextual fear*	**nc**	Fig. 6B	
Inducible transgenic	-	proliferating and differentiating new neurons	-	-	**acquisition**	*contextual fear (delay)*	**impaired**	Fig. 5B	Seo et al. 2015 (9)
Inducible transgenic	-		-	-	**acquisition**	*contextual fear (trace)*	**enhanced**	Fig. 5C	
Inducible transgenic	-		-	-	**retrieval (context)**	*contextual fear (delay)*	**nc**	Fig. 5D	
Inducible transgenic	-		-	-	**retrieval (context)**	*contextual fear (trace)*	**impaired**	Fig. 5E	
Inducible transgenic	-		-	-	**retrieval (tone)**	*contextual fear (delay)*	**nc**	Fig. 5F	
Inducible transgenic	-		-	-	**retrieval (tone)**	*contextual fear (trace)*	**nc**	Fig. 5G	
Targeted irradiation	-	proliferating cells in DG and adjacent tissue	-	-	**retrieval (tone)**	*contextual fear (delay)*	**nc**	Fig. 8D-E	
Targeted irradiation	-		-	-	**retrieval (tone)**	*contextual fear (trace)*	**nc**	Fig. 8D-E	
Targeted irradiation	-		-	-	**retrieval (context)**	*contextual fear (delay)*	**nc**	Fig. 8F	
Targeted irradiation	-		-	-	**retrieval (context)**	*contextual fear (trace)*	**enhanced**	Fig. 8F	
Inducible transgenic	-	proliferating and differentiating new neurons	-	-	**retrieval (context)**	*alternate trace fear-conditioning*	**impaired**	Fig. 12A-J	
Inducible transgenic, optogenetics	-	stem/proliferating neural precursors in dorsal DG	-	-	**acquisition**	*contextual fear*	**impaired**	Fig. 6B	Danielson et al. 2016 (10)
-	Inducible transgenic, optogenetics		-	-	**acquisition**	*contextual fear*	**impaired**	Supp Fig. 6B	
-			-	-	**retrieval**	*contextual fear*	**impaired**	Supp Fig. 6B	
Inducible transgenic, optogenetics	-		-	-	**acquisition**	*contextual fear*	**nc**	Supp Table 1	
	-		-	-	**retrieval**	*contextual fear*	**nc**	Supp Table 1	
-	Inducible transgenic, optogenetics		-	-	**acquisition**	*contextual fear*	**nc**	Supp Table 1	
-			-	-	**retrieval**	*contextual fear*	**nc**	Supp Table 1	

-	Inducible transgenic	mature granule neurons in DG	-	-	**acquisition**	*water maze*	**nc**	Fig. 6B	McAvoy et al. 2016 (11)
-	Inducible transgenic		-	-	**retrieval**	*water maze*	**nc**	Fig. 6C	
-	Inducible transgenic		-	-	**acquisition**	*water maze (reversal)*	**nc**	Fig. 6D	
-	Inducible transgenic		-	-	**cognitive flexibility (sub threshold training)**	*water maze (reversal)*	**enhanced**	Fig. 6E	
-	Inducible transgenic		-	-	**cognitive flexibility**	*water maze (reversal)*	**nc**	Fig. 6F	
-	Inducible transgenic		-	-	**acquisition**	*contextual fear*	**nc**	Fig. 6K-L	
-	Inducible transgenic		-	-	**retrieval**	*novel object recognition*	**enhanced**	Supp Fig. 5F	
MOOD									
Targeted irradiation	-	proliferating cells in DG, adjacent tissue	-	-	**anxiety**	*novelty suppressed feeding*	**nc**	Fig. 5A	Santarelli et al. 2003 (12)
Targeted irradiation	-		-	antidepressant medication	**anxiety**	*novelty suppressed feeding*	**increased**	Fig. 5A	
Targeted irradiation	-		stress (chronic)	antidepressant medication	**stress-induced despair**	*coat state*	**increased**	Fig. 5C	
Targeted irradiation	-			antidepressant medication	**stress-induced despair**	*grooming test*	**increased**	Fig. 5D	
Targeted irradiation	-	proliferating cells in DG, adjacent tissue	-	-	**despair**	*forced swim test*	**nc**	Fig. 4E, Supp Fig. 10	Airan, Meltzer et al. 2007 (13)
Targeted irradiation	-		-	antidepressant medication	**despair**	*forced swim test*	**increased**	Fig. 4E, Supp Fig. 10	
Targeted irradiation	-	proliferating cells in DG, adjacent tissue	-	-	**despair**	*coat state*	**nc**	Fig. 2A	Surget et al. 2008 (14)
Targeted irradiation	-		stress (chronic)	-	**stress-induced despair**	*coat state*	**nc**	Fig. 2A	
Targeted irradiation	-		-	-	**despair**	*grooming test*	**nc**	Fig. 2B	
Targeted irradiation	-		stress (chronic)	-	**stress-induced despair**	*coat state*	**nc**	Fig. 2B	
Targeted irradiation	-		-	-	**despair**	*novelty suppressed feeding*	**nc**	Fig. 2C	
Targeted irradiation	-			-	**stress-induced despair**	*novelty suppressed feeding*	**nc**	Fig. 2C	
Targeted irradiation	-			antidepressant medication	**stress-induced despair**	*coat state*	**increased**	Fig. 3A, 4A	
Targeted irradiation	-			antidepressant medication	**stress-induced 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 al., 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	Sahay et al., 2011 (20)
-	Inducible transgenic	stem/proliferating neural precursors in DG	-	access to running wheel	**anxiety**	*open field*	**decreased**	Fig. 4C	
-	Inducible transgenic	stem/proliferating neural precursors in DG	-	-	**anxiety**	*novelty suppressed 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 precursors in DG	-	-	**stress-induced despair**	*forced swim test*	**nc**	Fig. 3D	
-	Inducible transgenic	stem/proliferating neural precursors in DG	-	access to running wheel	**stress-induced 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 precursors in DG	-	-	**anxiety**	*elevated plus maze*	**nc**	Supp Fig.18C	
-	Inducible transgenic	stem/proliferating neural precursors in DG	-	access to running wheel	**anxiety**	*homecage*	**nc**	Supp Fig. 21D	
Inducible transgenic	-	stem/proliferating neural precursors in DG	-	-	**anxiety**	*novelty suppressed feeding*	**nc**	Fig. 4A-B	Snyder et al. 2011 (16)
Inducible transgenic	-		stress (acute)	-	**anxiety**	*novelty suppressed feeding*	**increased**	Fig. 4A-B	
Inducible transgenic	-		-	-	**despair**	*forced swim test*	**increased**	Fig. 4C-D	
Inducible transgenic	-		stress (acute)	-	**stress-induced despair**	*forced swim test*	**nc**	Fig. 4C-D	
Inducible transgenic	-		-	-	**anxiety**	*elevated plus maze*	**nc**	Supp Fig. 7	
Inducible transgenic	-		stress (acute)	-	**anxiety**	*elevated plus maze*	**nc**	Supp Fig. 7	
Targeted irradiation	-	proliferating cells in DG, adjacent tissue	-	-	**anxiety**	*cookie test*	**nc**	Fig. 2B	Surget et al. 2011 (15)
Targeted irradiation	-		stress (chronic)	-	**anxiety**	*cookie test*	**nc**	Fig. 2B	
Targeted irradiation	-			antidepressant medication	**anxiety**	*cookie test*	**increased**	Fig. 2B	
Inducible transgenic	-	stem/proliferating neural precursors in DG	-	-	**anxiety**	*open field*	**nc**	Fig. 3A-F	Kheirbek et al. 2012 (5)
Inducible transgenic	-		-	-	**anxiety**	*elevated plus maze*	**nc**	Fig. 3H	
Inducible transgenic	-		-	-	**anxiety**	*novelty suppressed feeding*	**nc**	Fig. 3I-K	
Inducible transgenic	-		-	-	**stress-induced despair**	*forced swim test*	**nc**	Fig. 3G	
-	Optogenetics	mature granule neurons in dorsal DG	-	-	**anxiety**	*elevated plus maze*	**decreased**	Fig. 6C-E	Kheirbek et al. 2013 (6)
-	Optogenetics		-	-	**anxiety**	*open field*	**decreased**	Fig. 6F-H	
-	Optogenetics		-	dopamine DA receptor antagonist	**anxiety**	*open field*	**normalized**	Supp Fig. 6E	
Optogenetics	-		-	-	**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 intermediate DG	-	-	**anxiety**	*elevated plus maze*	**nc**	Supp Fig. 6B	
Optogenetics	-		-	-	**anxiety**	*open field*	**nc**	Supp Fig. 6B	
-	Optogenetics	mature granule neurons in dorsal DG	-	-	**anxiety**	*novel object*	**nc**	Supp Fig. 6D	
-	Optogenetics		-	-	**anxiety**	*social interaction*	**nc**	Supp Fig. 6D	
-	Optogenetics		-	-	**anxiety**	*home in novel room*	**decreased**	Supp Fig. 6F	
-	Optogenetics	mature granule neurons in ventral DG	-	-	**anxiety**	*elevated plus maze*	**decreased**	Fig. 6J-L	
-	Optogenetics		-	-	**anxiety**	*open field*	**decreased**	Fig. 6M-O	
-	Optogenetics	mature granule neurons in intermediate DG	-	-	**anxiety**	*elevated plus maze*	**decreased**	Fig. 6G	
-	Optogenetics		-	-	**anxiety**	*open field*	**decreased**	Fig. 6G	
Optogenetics	-	mature granule neurons in ventral DG	-	-	**anxiety**	*elevated plus maze*	**nc**	Supp Fig. 6C	
Optogenetics	-		-	-	**anxiety**	*open field*	**nc**	Supp Fig. 6C	
Inducible transgenic	-		-	-	**anxiety**	*light /dark*	**nc**	Fig. 3C-D	
Inducible transgenic	-		stress (chronic)	-	**stress-induced anxiety**	*light /dark*	**nc**	Fig. 3C-D	
Inducible transgenic	-		-	-	**anxiety**	*elevated zero maze*	**nc**	Fig. 3E	
Inducible transgenic	-		stress (chronic)	-	**stress-induced anxiety**	*elevated zero maze*	**nc**	Fig. 3E	
Inducible transgenic	-		-	-	**despair**	*forced swim test*	**nc**	Fig. 3F	
Inducible transgenic	-		stress (chronic)	-	**stress-induced despair**	*forced swim test*	**nc**	Fig. 3F	

Inducible transgenic	-	stem/proliferating neural precursors in DG	-	-	**anxiety**	*social interaction*	**nc**	Fig. 3G	Lehmann et al. 2013 (17)
Inducible transgenic	-		stress (chronic)	-	**stress-induced anxiety**	*social interaction*	**nc**	Fig. 3G	
Inducible transgenic	-			-	**stress-induced anxiety**	*light /dark*	**nc**	Fig. 4B-C	
Inducible transgenic	-			adrenalectomy	**stress-induced anxiety**	*light /dark*	**increased**	Fig. 4B-C	
Inducible transgenic	-			-	**stress-induced anxiety**	*elevated zero maze*	**nc**	Fig. 4D	
Inducible transgenic	-			adrenalectomy	**stress-induced anxiety**	*elevated zero maze*	**increased**	Fig. 4D	
Inducible transgenic	-			-	**stress-induced despair**	*forced swim test*	**nc**	Fig. 4E	
Inducible transgenic	-			adrenalectomy	**stress-induced despair**	*forced swim test*	**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	stem/proliferating neural precursors in DG	-	-	**anxiety**	*open field*	**nc**	Fig. 1e	Hill et al. 2015 (19) *relative to CORT only group
-	Inducible transgenic		CORT treatment	-	**anxiety**	*open field*	**nc**	Fig. 4b	
-	Inducible transgenic		-	-	**anxiety**	*elevated plus maze*	**nc**	Fig. 1f, 4c	
-	Inducible transgenic		CORT treatment	-	**anxiety**	*elevated plus maze*	**decreased***	Fig. 4c	
-	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	-	proliferating and differentiating new neurons	-	before memory testing	**anxiety**	*open field*	**nc**	Fig. 10A-D	Seo et al. 2015 (9)
Inducible transgenic	-		-	after memory testing	**anxiety**	*open field*	**increased**	Fig. 10E-H	
Inducible transgenic	-		-	before memory testing	**anxiety**	*elevated plus maze*	**nc**	Fig. 11	
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 (18) *after social defeat stress
Inducible transgenic, optogenetics	-	stem/proliferating neural precursors in dorsal DG	-	-	**anxiety**	*open field*	**nc**	Supp Table 1	Danielson et al. 2016 (10)
Inducible transgenic, optogenetics	-		-	-	**anxiety**	*elevated plus maze*			
-	Inducible transgenic, optogenetics		-	-	**anxiety**	*open field*			
-	Inducible transgenic, optogenetics		-	-	**anxiety**	*elevated plus maze*			
Inducible transgenic, optogenetics	-	stem/proliferating neural precursors in ventral DG	-	-	**anxiety**	*open field*			
Inducible transgenic, optogenetics	-		-	-	**anxiety**	*elevated plus maze*			
-	Inducible transgenic, optogenetics		-	-	**anxiety**	*open field*			
-	Inducible transgenic, optogenetics		-	-	**anxiety**	*elevated plus maze*			
-	Inducible transgenic	mature granule neurons in DG	-	-	**anxiety**	*open field*	**nc**	Supp Fig. 5B	McAvoy et al. 2016 (11)
-	Inducible transgenic		-	-	**anxiety**	*light/dark*		Supp Fig. 5C	
-	Inducible transgenic		-	-	**anxiety**	*elevated plus maze*		Supp Fig. 5D	
-	Inducible transgenic		-	-	**stress-induced despair**	*forced swim test*		Supp Fig. 5E	
PATTERN SEPARATION									
-	Inducible transgenic	stem/proliferating neural precursors in DG	-	-	**pattern separation**	*contextual discrimination fear*	**enhanced**	Fig. 2C-F, Supp Fig. 15	Sahay et al., 2011 (20)
Targeted irradiation	Inducible transgenic	stem/proliferating neural precursors in DG	-	-	**pattern separation**	*contextual discrimination fear*	**impaired**	Supp Fig. 14C-G	
Inducible transgenic	-	stem/proliferating neural precursors in DG	-	-	**pattern separation**	*contextual discrimination fear*	**impaired**	Fig. 4I-J	Kheirbek et al., 2012 (5)
Inducible transgenic, optogenetics	-	stem/proliferating neural precursors in dorsal DG	-	-	**pattern separation**	*contextual discrimination fear (inhibited in shock-paired context)*	**nc**	Fig. 6C	Danielson et al., 2016 (10)
Inducible transgenic, optogenetics	-		-	-		*contextual discrimination fear (inhibited in unpaired context)*	**impaired**	Fig. 6D	
Inducible transgenic, optogenetics	-		-	-		*contextual discrimination fear (highly dissimilar context)*	**nc**	Supp Fig. 6C	
Inducible transgenic, optogenetics	-		-	-		*contextual discrimination fear*	**nc**	Supp Fig. 6D	
-	Inducible transgenic	mature granule neurons in DG	-	-	**pattern separation**	*contextual fear discrimination*	**enhanced**	Fig. 6L	McAvoy et al., 2016 (11)
Antimitotic agent	Inducible transgenic		-	-		*contextual fear discrimination*	**normalized**	Fig. 6M	
REWARD									
Targeted irradiation	-	proliferating cells in DG, adjacent tissue	-	-	**acquisition of reward based operant learning**	*sucrose pellets*	**nc**	Fig. 3A, 5A	Noonan et al., 2010 (21)
Targeted irradiation	-		i.v. cocaine self-administration (post-irradiation)	-	**acquisition of self-administration**	*i.v. cocaine*	**increased**	Fig. 3B	
Targeted irradiation	-			-	**sensitivity to reward**	*dose response, intake of i.v. cocaine*	**increased**	Fig. 3C-D	
Targeted irradiation	-			-	**motivation for reward**	*progressive ratio for i.v. cocaine*	**increased**	Fig. 3E	
Targeted irradiation	–		oral sucrose pellet self-administration	–	**acquisition of self-administration**	*sucrose pellets*	**nc**	Fig. 5C	
Targeted irradiation	–			–	**motivation for reward**	*progressive ratio for sucrose pellets*	**nc**	Fig. 5D-E	
Targeted irradiation	–			–	**extinction of reward learning**	*sucrose pellets*	**nc**	Fig. 5F	
Targeted irradiation	–			–	**reinstatement of reward learning**	*cue, sucrose pellets for sucrose self-administration*	**nc**	Fig. 5G-H	
Targeted irradiation	-		i.v. cocaine self-administration (pre-irradiation)	-	**extinction of reward learning**	*i.v. cocaine*	**decreased**	Fig. 6B-C	
Targeted irradiation	-			-	**reinstatement of reward learning**	*cue, footshock, and cocaine for i.v. cocaine self-administration*	**nc**	Fig. 6D-F	
Inducible transgenic	-	stem/proliferating neural precursors in DG	-	-	**reward**	*sucrose preference, acute test*	**decreased**	Fig. 4E	Snyder et al., 2011 (16)
Inducible transgenic	-		stress (acute)	-		*sucrose preference, acute test*	**decreased**	Fig. 4E	
Inducible transgenic	-		-	-		*sucrose preference, dark cycle test*	**decreased**	Fig. 4F	
Inducible transgenic	-		stress (acute)	-		*sucrose preference, dark cycle test*	**decreased**	Fig. 4F	