$3.3x10^5$±0.2mmHg, p>0.05 in 100ng V1a PT rats, $3.4x10^5$±0.2mmHg, p>0.05 in 500ng V1a PT rats, $3.2x10^5$±0.2mmHg, p>0.05 in 100ng V1b PT rats and $3.3x10^5$±0.1mmHg, p>0.05 in 500ng V1b PT rats), the increase of HRmax (488±10bpm, p<0.05 and 469±14bpm, p<0.05, respectively) during exposure to air-jet and shortened the recovery period of SBP (361±22s in nontreated rats, 206±46s, p<0.001 in 100ng V1a PT rats, 113±15s, p<0.001 in 500ng V1a PT rats, 138±42s, p<0.001 in 100ng V1b PT rats, and 60±8s, p<0.001 in 500ng V1b PT rats) and HR (378±18s in nontreated rats, 216±43s, p<0.05 in 100ng V1a PT rats, 138±21s, p<0.001 in 500ng V1a PT rats, 175±57s, p<0.001 in 100ng V1b PT rats and 140±26s, p<0.001 in 500ng V1b PT rats) and prevented the appearance of LF-SBP. The V1b also reduced the SBPmax increase during exposure to stress (145±9mmHg, p<0.05 in 100ng V1b PT rats and 151±5mmHg, p<0.05 in 500ng V1b PT rats). Immobilization induced a rise of SBP (153±4mmHg, p<0.01), LF-SBP and respiratory-related HF-SBP variability; it did not affect HR but did enhance the vagally mediated HF-HR variability. Both V1a and V1b (n=6/each group) reduced the evoked increases in SBP and SBP variability during immobilization. The V1a PT rats submitted to immobilization now exhibited significant tachycardia (495±65bpm, p<0.05) and failed to increase HF-HR variability. The results suggest that both vasopressin V1a and V1b receptors are involved in the central mediation of the cardiovascular response of rats exposed to emotional stress.

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Where applicable, the authors confirm that the experiments described here conform with the Physiological Society ethical requirements.

C5

Hippocampal neurogenesis in the prenatal stress rat is enhanced by agomelatine treatment. Functional implications for anxiety behaviour

S. Morley-Fletcher[1], J. Mairesse[1], O. Viltart[1], A. Daszuta[2], A. Soumier[2], M. Banasr[2], A. Zuena[3], P. Casolini[3], E. Mocaer[4] and S. Maccari[1]

[1]Lab. of Perinatal Stress, University of Lille 1, Villeneuve d'Ascq, France, [2]2 IC2N, CNRS, Marseille, France, [3]University of Rome La Sapienza, Rome, Italy and [4]IRIS, Courbevoie, France

Prenatal stress (PS) in the rat is a well documented model of early stress that has high face and predictive validity as animal model of depression (Maccari et al. 2003; Morley-Fletcher et al. 2004). Indeed, PS rats present a life span reduction of hippocampal neurogenesis (Lemaire et al. 2000), increased anxiety and impairment of the feedback inhibition of the hypothalamus-pituitary adrenal axis. We here evaluated the effect of a chronic treatment (6 weeks, 40 mg/kg i.p. daily) with the new antidepressant agomelatine, a melatonin agonist with 5-HT2C antagonist properties, on hippocampal neurogenesis in PS male adult rats and, on PSA-NCAM expression, a marker of neuroplasticity. To investigate also the functional, behavioural impact of neurogenesis, we tested animals in the elevated-plus maze test to assess their anxiety-like response. To evidence neurogenesis and cell survival, the thymidine-analogue bromodeoxyuridine (BrdU, 75 mg/kg i.p. twice daily for 4 days) was injected after 3 weeks of the agomelatine treatment which was then continued for an additional 3 weeks. The results indicate a markedly reduced neurogenesis in the dentate gyrus of PS rats and an enhanced PSA-NCAM expression (ANOVA, group by treatment interaction, $F(1,21) = 10.53$, $P < 0.01$). The effects of PS were reversed by the chronic agomelatine treatment Agomelatine's effect on survival was selectively observed in the ventral part of the dentate gyrus (ANOVA region by group by treatment interaction, $F(1,26) = 4.73$, $P < 0.05$), a brain region specifically involved in anxiety (Kjesltrup et al. 2002). Moreover in PS animals agomelatine did not modify the ratio between neurons and glial cells assessed by NeuN and GFAP labelling. Behaviourally, PS rats treated with agomelatine spent more time on the open arms of the elevated plus maze, (ANOVA, group by treatment interaction, $F(1,27) = 7.06$, $P < 0.05$) suggesting a possible causal link between increased hippocampal neurogenesis and attenuated anxiety-like behaviour in a validated model of depression. The results obtained with agomelatine provide further evidence of neuroplasticity as one of the targets of antidepressants and further reinforce the high predictive validity of the PS rat as animal model of depression.

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Where applicable, the authors confirm that the experiments described here conform with the Physiological Society ethical requirements.

C6

Differences in subregion-specific translocation patterns of mineralocorticoid and glucocorticoid receptors in rat hippocampus revealed by immunohistochemistry

R.A. Sarabdjitsingh, O. Meijer and R. de Kloet

Department of Medical Pharmacology, LACDR, University of Leiden, Leiden, Netherlands

Activation of glucocorticoid receptors (GR) and mineralocorticoid receptors (MR) by corticosteroids results in nuclear translocation of the receptor-ligand complex. There, the receptors can bind to DNA for transcriptional regulation. Though this cellular mechanism is well established in cell lines, very little is known about the subcellar behaviour of the receptors in the brain and the associated consequences for DNA binding and gene expression. The aim of this study was to examine the translocation patterns of MR and GR in the different subfields of the rat hippocampus in detail by using immunohistochemistry and confocal imaging. Based on studies that have described differences in receptor expression pattern in the hippocampus and affinities for corticosterone, we hypothesize (1) differences in translocation patterns for the different hippocampal subregions and (2) different translocation speed for MR and GR within one area.