

# Accepted Manuscript

Orexin system in swine ovarian follicle

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PII: S0739-7240(17)30111-X

DOI: [10.1016/j.domaniend.2017.09.003](https://doi.org/10.1016/j.domaniend.2017.09.003)

Reference: DAE 6282

To appear in: *Domestic Animal Endocrinology*

Received Date: 25 May 2017

Revised Date: 1 September 2017

Accepted Date: 3 September 2017

Please cite this article as: Ciccimarra R, Bussolati S, Grasselli F, Grolli S, Ragionieri L, Ravanetti F, Botti M, Gazza F, Cacchioli A, Di Lecce R, Cantoni AM, Basini G, Orexin system in swine ovarian follicle, *Domestic Animal Endocrinology* (2017), doi: 10.1016/j.domaniend.2017.09.003.

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## 1 **Orexin system in swine ovarian follicle**

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### 7 A B S T R A C T

8 Successful reproduction is strictly linked to metabolic cues. The orexins are a family  
9 of hypothalamic neurohormones, well known for their key role in the control of  
10 food intake and the involvement in several aspects of the reproductive process.  
11 The biological actions of both orexins are carried out through binding to the  
12 related Orexin 1 (OX1R) and Orexin 2 (OX2R) G-protein coupled receptors. The  
13 purpose of this study was to investigate the presence of orexin system components  
14 in the porcine ovaries, in order to contribute to expand the knowledge about their  
15 pleiotropic role. Firstly, we investigated the localization of orexin A (OXA) and its  
16 receptors by immunochemistry in different ovarian districts. Thereafter, we  
17 evaluated the expression of the prepro-orexin gene and OXA effects on granulosa  
18 cell functions. Immunohistochemical study revealed the presence of orexinergic  
19 system components in porcine ovarian follicles. Moreover, our data show the  
20 expression of prepro-orexin mRNA in swine ovarian follicles > 5 mm. In addition,  
21 OXA influences proliferation ( $P < 0.05$ ), steroidogenic activity ( $P < 0.05$ ) and redox  
22 status of granulosa cells ( $P < 0.05$ ). Therefore, we hypothesize that OXA could exert  
23 a local physiological role in swine ovarian follicles even if further studies are  
24 required in order to deeply define the function of this pleiotropic system.

25

26 *Keywords:*

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