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Author(s)	TOCHIHARA, Takanobu
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The relationships among the morphological and histological features of bovine follicles and the estimated developmental competence of oocytes

Takanobu Tochihara

*Laboratory of Theriogenology,
Department of Veterinary Clinical Sciences,
School of Veterinary Medicine,
Hokkaido University, Sapporo 060, Japan*

The purpose of this study was to investigate the relationship between the morphological and histological features of bovine follicles and the estimated developmental competence of oocytes based on their morphological features.

Bovine follicles derived from ovaries with corpora lutea were initially classified into two categories based on the presence of blood vessels on the surface of follicles (Group A: with clear blood vessels, Group B: with unclear blood vessels), and subsequently grouped into three categories based on their follicular diameters (a: <2.0mm, b: 2.1–6.0mm, c: >6.1mm).

Histological examination was performed by using the following criteria: the rate of granulosa cells undergoing pyknosis and cell division, the presence of macrophage invading into the follicular antrum or theca folliculi and the presence of atretic bodies in the follicular antrum. The histological feature was affected by the presence of blood vessels ($p < 0.05$). Follicles in Group B

had a higher rate of granulosa cells undergoing pyknosis and were highly invaded with macrophage compared to follicles in Group A. However, the follicular diameter did not affect the histological feature.

In the next experiment, cumulus-oocyte complexes were isolated from the follicles classified as above and then their developmental competence were estimated from the morphological features of cumulus and ooplasm. The larger sized follicles showed a higher rate of vascularized follicles ($a < b < c$, $p < 0.05$). However, oocytes with high developmental competence were present in vascularized follicles having diameters between 2.1 and 6.0mm.

The results suggest that vascularized follicles might be healthy and contain oocytes with high developmental ability. Under the present criteria for histological examination, the correlation between follicular regression and follicular diameters could not be established

Effects of ovarian status, oocyte morphology and hormone supplementation on *in vitro* maturation of domestic cat oocytes

Shiho Fujita

*Laboratory of Theriogenology,
Department of Veterinary Clinical Sciences,
School of Veterinary Medicine,
Hokkaido University, Sapporo 060, Japan*

The improvement of *in vitro* maturation systems for oocytes is needed to establish a

reliable *in vitro* fertilization (IVF) technique for the domestic cat. The present study examined