Outline
Pharmacology is an educational and research field dealing with the interaction of biological systems and agents for better understanding of pharmacodynamic and pharmacokinetic aspects of therapeutic drugs. Pharmacology is also a research field that clarifies regulatory mechanisms of pathophysiological function by using agents whose mechanism of action is known. We perform in vivo and in vitro pharmacological experiments on behavioral, biochemical, and molecular aspects by utilizing various techniques, apparatus, and experimental animals. Our particular research interests are shown below.

Faculty members
Professor: Masahiko Hirafuji, Ph.D.
Associate Professor: Takuji Machida, Ph.D.
Research Associate: Mikiko Yutani, B.Pharm.

Postgraduate students
Tomoko Endo, B.Pharm.
Saki Shiga, B.Pharm.

Main research in progress
1) Roles of 5-hydroxytryptamine and substance P in cancer chemotherapy-induced nausea and vomiting
2) Protective roles of ω-3 unsaturated fatty acids and their metabolites in the cardiovascular system
3) Effect of pressure stress on vascular cell functions, particularly on production of vasodilating substances

Methotrexate administration induces acute hyperplasia of enteroendocrine cells containing substance P (A and B) and mRNA overexpression of its precursor protein (right) in rats (from JPS, 2017).

Double immunostaining of substance P (A) and tryptophan hydroxylase (B) in the intestinal mucosa after methotrexate administration to rats (from JPS, 2017).
Pulsatile pressure-loading apparatus (A) and possible mechanisms of modulating vascular smooth muscle cells’ function by high pressure and DHA at local site of vascular injury (B) (from Yakugaku Zasshi, 2016).

**Current publications**