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- SAEED, S., MALIK, S.A., DAD, K., SAJJAD, A. AND ALI, M. In search of the best native pollinators for bitter gourd (*Momordica charantia* L.) pollination in Multan, Pakistan .. 1633
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- SALJOQI, A.U., ZIA, Q., GUL, F. AND REHMAN, S. Compatibility of jamama oil (*Eruca sativa* L.) with different stages of *Trichogramma chilonis* (Ishii) (Hymenoptera: Trichogrammatidae) 1665
- MUKHTAR, M.K. Spiders of the genus *Neoscona* (Araneae: Araneidae) from Punjab, Pakistan ... 1711
- KUCHAI, J.A., AHMAD, F., CHISHTI, M.Z., TAK, H., AHMAD, J., AHMAD, S. AND RASOOL, M. A study on morphology and morphometry of *Haemonchus contortus* 1737
- SHAH, A., MOHSIN, A., BODLAH, I., NAEEM, M. AND HAFEZ, Z. Dubas bug, *Ommatissus lybicus* (Tropiduchidae: Hemiptera) - A new record from Panjgur, Balochistan, Pakistan (S.C.) 1765

Anatomy and Teratology

- AHMAD, N., NAVeed, K. AND ASMATULLAH Exposure to β -cyfluthrin during pregnancy induces teratogenicity in murine foetuses 1515
- KOÇ, N.D. AND AKBULUT, C. Electron and light microscopic investigations of follicular

- epithelium in vitellogenic oocyte of zebrafish (*Danio rerio*) 1581

Freshwater Biology

- TOKATLI, C., KÖSE, E., ÇİÇEK, A., EMIROĞLU, Ö., ARSLAN, N. AND DAYIOĞLU, H. Lead accumulations in biotic and abiotic components of Emet Stream, Uluabat Lake Basin, Turkey 1587

Palaeontology

- BHATTI, Z.H., KHAN, M.A., AKHTAR, M., KHAN, A.M., GHAFAR, A., IQBAL, M. AND IKRAM, T. *Giraffokeryx* (Artiodactyla: Mammalia) remains from the Lower Siwaliks of Pakistan 1623
- BHATTI, Z.H., KHAN, M.A., AKHTAR, M., KHAN, A.M., GHAFAR, A., IQBAL, M. AND SIDDIQ, M.K. *Giraffa punjabiensis* (Giraffidae: Mammalia) from Middle Siwaliks of Pakistan 1689

Molecular Biology of Cancer / Molecular Genetics

- MURTAZA, B.N., BIBI, A., NADEEM, M.S., CHAUDRI, M.S. AND SHAKOORI, A.R. Identification of a novel mutation in codon 31 of kirstein rat sarcoma viral oncogene homologue in colon cancer: another evidence of non-canonical mutational pathway 1671
- SHAIQ, P.A., KLAUSEGGER, A., LATIF, A., BAUER, J., QAMAR, R. AND RAJA, G.K. Missense mutation in *LAMA3* associated with herlitz junctional epidermolysis bullosa in a Pakistani family 1697

Infectious Diseases

- MANSOOR, M.K., HUSSAIN, I., ARSHAD, M. AND MUHAMMAD, M. Protein fractionation analysis of fowl adenovirus serotype 4 (FAV-4) associated with fowl hydropericardium-hepatitis syndrome in Pakistan (S.C.) 1751
- YASINZAI, M.I. AND KAKARSULEMANKHEL, J. Prevalence of human malaria infection in Pakistani areas bordering Iran: District Turbat, Pakistan (S.C.) 1769