

Project No 493 - The Rise and Fall of the Vendian Biota (2003-2007)  
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Over 30 Russian specialists based at the Paleontological Institute RAS and Geological Institute RAS in Moscow, Zavaritsky Institute of Geology and Geochemistry RAS in Ekaterinburg, Institute of Geology and Geochronology of the Precambrian RAS in St. Petersburg, and Institute of Petroleum Geology and Geophysics RAS in Novosibirsk take part in the Project. Multidisciplinary field studies of the Vendian deposits and fossil excavations have been carried out in the White Sea Region, Northern and Middle Urals, Arctic Siberia, Mongolia and Namibia (PIN RAS). New abundant fossils of outstanding preservation are collected. New sedimentary and taphonomic models are developed for the Vendian siliciclastic and carbonate paleobasins, and the data on the biodiversity is essentially increased. Geochemical environmental indicators for the habitats of the oldest animals are established. Influence of the salinity fluctuations over the biodiversity is demonstrated. Stratigraphic range of the metazoan body and trace fossils as well as of the megascopic algal taxa is defined with a high precision. New horizons of the volcanic ash beds in the fossiliferous parts of the sequences are discovered and probed for the radiometric dating. New fossil taxa related to the Paleozoic groups are described from the Vendian deposits. A full catalogue of the Vendian fossil localities that includes data on stratigraphy, sedimentology, taphonomy, paleontology, and isotopic age is completed. Over 30 papers are published and 24 papers are accepted for publication, including a comprehensive monograph "Rise of Animalis" and a volume of Proceedings of the IGCP 493 meeting related to the Vendian biota (both in English). Internet site ([www.vend.paleo.ru](http://www.vend.paleo.ru)) devoted to the Vendian Period has been developed in regard to geo- and bio-events, typical fossils, research news, major publications, references, links etc., Paleontological Institute, Russian Academy of Sciences (PIN RAS). A computer data base related to the Vendian Fossil Collection is under construction: over 2000 specimens have been documented (picture, locality, stratigraphy etc.) from 21 fossil sites and 103 stratigraphic levels. Bibliographical data base related to the Neoproterozoic geology and paleontology is under construction. Paleontological Institute RAS in the collaboration with the Monash University (Melbourne) arranged the traveling paleontological exhibition devoted to the origin of animals in the Fucui Museum (Japan).

Some publications:

Fedonkin M.A. 2006. Eukaryotization of ancient biosphere: factors and succession of events. 52nd Session of the Paleontological Society: Modern paleontology: classical and non-traditional. Abstracts. St. Petersburg. 3-7 April 2006. P. 126-128. (In Russian).

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Fedonkin M.A. 2006. Ediacaran (Vendian) radiation of marine biota: palaeoecological and stratigraphic implications. In: Ancient Life and Modern Approaches. Abstracts of the Second International Palaeontological Congress, June 17-21, 2006, Beijing, China. (Qun Yang, Yongdong Wang, and Elizabeth A. Weldon, eds.) University of Science and Technology of China Press. P. 278.

Fedonkin M.A. Availability of transition metals as a key factor of an origin and evolution of life. Symposium on the Origin of Life, International Conference on the Molecular Photonics, Saint-Petersburg, Russia, June 28 – July 4, 2006. Abstracts.

Fedonkin M.A. 2006. Two records of life: an experience of comparative analysis (paleobiology and genomics on the early stages of evolution of biosphere). Transaction of the Institute of Geology, Komi Science Center, Ural Branch of the Russian Academy of Sciences, Syktyvkar p. 331-350. (In Russian).

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Fedonkin M.A., Simonetta A., and Ivantsov A.I. New data on *Kimberella*, the Vendian mollusc-like organism (White Sea region, Russia): paleoecological and evolutionary implications. In: Vickers- Rich P. and P. Komarower (Eds.) "Rise and Fall of the Vendian Biota", Geological Society of London, Special Volume (50 pp. in press).

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Hengeveld R. and M.A. Fedonkin, 2007. Bootstrapping the energy flow in the initiation of life. Acta Biotheoretica (55 pp. in press).

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Fedonkin V.A., Gehling J.G., Grey K., Narbonne G.M., Vickers-Rich P. The Rise of Animals. Evolution and Diversification of the Kingdom Animalia. John Hopkins Press (182120 words, 739 figures, in press).

Sokolov B.S. and Fedonkin M.A. The Vendian System (Period). Large Russian Encyclopedia. (in press).

Serezhnikova E.A., Ivantsov A.Yu. 2006. New spicule-bearing organism of sponge grade from the Ediacaran (Vendian) of the White Sea, Russia. In: Ancient Life and Modern Approaches. Abstracts of the Second International Palaeontological Congress, June 17-21, 2006, Beijing, China. (Qun Yang, Yongdong Wang, and Elizabeth A. Weldon, eds.) University of Science and Technology of China Press. P. 290-291.

Serezhnikova E.A., Ivantsov A.Yu. Fedomia mikhaili - a new spicule-bearing organism of Sponge grade from the Vendian (Ediacaran) of the White Sea, Russia. Palaeoworld, 10 pp., in press.

Serezhnikova. E.A. Vendian Hiemalora reinterpreted as holdfasts of benthic organisms. In: Vickers- Rich P. and P. Komarower (Eds.) "Rise and Fall of the Vendian Biota", Geological Society of London, Special Volume, 11 pp., in press.

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Leonov M. V. Terminal Proterozoic Lyamtsa algaeflora (White Sea, Russia)//In: Ancient Life and Modern Approaches. Abstracts of the Second International Palaeontological Congress,

June 17-21, 2006, Beijing, China. (Qun Yang, Yongdong Wang, and Elizabeth A. Weldon, eds.) University of Science and Technology of China Press. P. 282-283.

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Vickers-Rich P., Fedonkin M.A., Gehling J.G., Leonov M.V., Ivantsov A.Yu., P. Komarower, M. Fuller. Atlas of Precambrian Metazoans. In: Fedonkin et al., *The Rise of Animals. Evolution and Diversification of the Kingdom Animalia*. John Hopkins University Press: 268-302.