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Antibodies armed with functionality as translational tools of the newest generation to be applied for chronic autoimmune inflammation management

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Antibodies armed with functionality including catalytic Abs (catAbs) are multivalent immunoglobulin's (Igs) with a capacity to hydrolyze the antigenic (Ag) substrate. In this sense, proteolytic Abs (Ab-proteases) represents Abs to provide proteolytic effects. Abs against myelin basic protein/MBP with proteolytic activity exhibiting sequence-specific cleavage of MBP is of great value to monitor demyelination whilst in MS. The activity of Ab-proteases was first registered at the subclinical stages 1-2 years prior to the clinical illness. And the activity of the Ab-proteases revealed significant correlation with scales of demyelination and the disability of the patients as well. So, the activity of Ab-proteases and its dynamics tested would confirm a high subclinical and predictive (translational) value of the tools as applicable for personalized monitoring protocols. Of tremendous value are Ab-proteases directly affecting remodeling of tissues with multilevel architectonics (for instance, myelin). By changing sequence specificity one may reach reduction of a density of the negative proteolytic effects within the myelin sheath and thus minimizing scales of demyelination. Ab-proteases can be programmed and re-programmed to suit the needs of the body metabolism or could be designed for the development of new catalysts with no natural counterparts. Further studies are needed to secure artificial or edited Ab-proteases as translational tools of the newest generation to diagnose, to monitor, to control and to treat and rehabilitate MS patients at clinical stages and to prevent the disorder at subclinical stages in persons-at-risks to secure the efficacy of regenerative manipulations.

Recent Publications:

1. Ponomarenko N A, Durova O M, Vorobiev I I, Aleksandrova E S, Telegin G B, Cham-borant O G, Sidorik L L, Suchkov S V, Alekberova Z S, Gnuchev N V and Gabibov A G (2002) Catalytic antibodies in clinical and experimental pathology: human and mouse models. *Journal of Immunological Methods* 269(1-2):197-211.
2. Ponomarenko N A, Durova O M, Vorobiev I I, Belogurov A A, Telegin G B, Suchkov S V and A G Gabibov (2005) Catalytic activity of autoantibodies toward myelin basic protein correlates with the scores on the multiple sclerosis expanded disability status scale. *Immunol. Lett.* 103(1):45-50.
3. Gabibov A G, Ponomarenko N A, Tretyak E B, Paltsev M A and Suchkov S V (2006) Catalytic autoantibodies in clinical autoimmunity and modern medicine. *Autoimmunity Reviews* 5(5):324-330.
4. Gabibov A A, Paltsev M A and Suchkov S V (2011) Antibody-associated proteolysis in surveillance of autoimmune demyelination: clinical and preclinical issues. *Future Neurology* 6(3):303-305.
5. D Kostyushev, I Tsarev, D Gnatenko, M Paltsev and S Suchkov (2011) Myelin-associated serological targets as applicable to diagnostic tools to be used at the preclinical and transient stages of multiple sclerosis progression. *Open J Immunology* 1(3):80-86.

Biography

S Suchkov graduated from Astrakhan State Medical University in 1980 and was awarded with MD. In 1985, he completed PhD from I M Sechenov Moscow Medical Academy and Institute of Medical Enzymology. In 2001, he completed his Doctor Degree at the National Institute of Immunology, Russia. From 1989 to 1995, he was Head of the Lab of Clinical Immunology, Helmholtz Eye Research Institute in Moscow. From 1995 through 2004, he is a Chair of the Dept. for Clinical Immunology, Moscow Clinical Research Institute (MONIKI). In 1993-1996, he was a Secretary-in-Chief of the Editorial Board, *Biomedical Science*, an international journal published jointly by the USSR Academy of Sciences and the Royal Society of Chemistry, UK. At present, he is Professor and Chair, Department for Personalized and Translational Medicine, I M Sechenov First Moscow State Medical University and Department of Clinical Immunology, A I Evdokimov Moscow

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State Medical and Dental University. He is a member of the Editorial Boards of *Open Journal of Immunology*, *EPMAJ*, *American J of Cardiovascular Research and Personalized Medicine Universe*. He was the Head of the Lab of Clin Immunol at Helmholtz Eye Res Inst in Moscow from 1989 to 1995. He was a Chair in the Dept. for Clin Immunol at Moscow Reg Clin Res Inst from 1995 to 2004. He has been trained at: NIH; Wills Eye Hospital, PA, USA; University of Florida in Gainesville; UCSF, S-F, CA, USA; Johns Hopkins University, Baltimore, MD, USA. He was an Executive Secretary-in-Chief of the Editorial Board, *Biomedical Science*, an international journal published jointly by the USSR Academy of Sciences and the Royal Society of Chemistry, UK. At present, he is a Director of the Center for Personalized Medicine, Sechenov University and Chair in the Dept. for Translational Medicine at Moscow Engineering Physical Institute (MEPhI), Russia. He is a member of New York Academy of Sciences, USA; American Chemical Society (ACS), USA; American Heart Association (AHA), USA; EPMA (European Association for Predictive, Preventive and Personalized Medicine), Brussels, EU; ARVO (American Association for Research in Vision and Ophthalmology); ISER (International Society for Eye Research); PMC (Personalized Medicine Coalition), Washington, USA.

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