

Köszönetnyilvánítás

Szeretnénk megköszönni **Dr. Duda Ernő** Professzor Úrnak, hogy lehetővé tette számunkra, hogy az SZTE ÁOK Orvosi Biológiai Intézetben dolgozhassunk, valamint azt is, hogy mindvégig támogatott minket.

Továbbá köszönettel tartozunk **Dr. Filkor Katának** a rengeteg segítségért, türelemért, továbbá külön köszönettel tartozunk neki azért is, hogy segítette a konferenciára való felkészülésünket.

Valamint köszönettel tartozunk még az SZTE ÁOK Orvosi Biológiai Intézet minden dolgozójának.

Irodalomjegyzék

- Aggarwal, B. B., S. C. Gupta, et al. (2012). "Historical perspectives on tumor necrosis factor and its superfamily: 25 years later, a golden journey." Blood **119**(3): 651-665.
- Bae, E. M., W. J. Kim, et al. (2008). "Reverse signaling initiated from GITRL induces NF-kappaB activation through ERK in the inflammatory activation of macrophages." Mol Immunol **45**(2): 523-533.
- Balkwill, F. and A. Mantovani (2001). "Inflammation and cancer: back to Virchow?" Lancet **357**(9255): 539-545.
- Bhardwaj, A. and B. B. Aggarwal (2003). "Receptor-mediated choreography of life and death." J Clin Immunol **23**(5): 317-332.
- Black, R. A., C. T. Rauch, et al. (1997). "A metalloproteinase disintegrin that releases tumour-necrosis factor-alpha from cells." Nature **385**(6618): 729-733.
- Bradley, J. R. (2008). "TNF-mediated inflammatory disease." J Pathol **214**(2): 149-160.
- Brietzke, E. and F. Kapczinski (2008). "TNF-alpha as a molecular target in bipolar disorder." Prog Neuropsychopharmacol Biol Psychiatry **32**(6): 1355-1361.
- Campbell, I. K., L. J. Roberts, et al. (2003). "Molecular targets in immune-mediated diseases: the case of tumour necrosis factor and rheumatoid arthritis." Immunol Cell Biol **81**(5): 354-366.
- Carswell, E. A., L. J. Old, et al. (1975). "An endotoxin-induced serum factor that causes necrosis of tumors." Proc Natl Acad Sci U S A **72**(9): 3666-3670.
- Chen, C., A. Constantinou, et al. (2011). "Modulating antibody pharmacokinetics using hydrophilic polymers." Expert Opin Drug Deliv **8**(9): 1221-1236.
- Chen, J. J., P. L. Yao, et al. (2003). "Up-regulation of tumor interleukin-8 expression by infiltrating macrophages: its correlation with tumor angiogenesis and patient survival in non-small cell lung cancer." Clin Cancer Res **9**(2): 729-737.
- Chey, W. Y., A. Hussain, et al. (2001). "Infliximab for refractory ulcerative colitis." Am J Gastroenterol **96**(8): 2373-2381.
- Colegio, O. R., N. Q. Chu, et al. (2014). "Functional polarization of tumour-associated macrophages by tumour-derived lactic acid." Nature **513**(7519): 559-563.
- Dowlati, Y., N. Herrmann, et al. (2010). "A meta-analysis of cytokines in major depression." Biol Psychiatry **67**(5): 446-457.
- Eissner, G., S. Kirchner, et al. (2000). "Reverse signaling through transmembrane TNF confers resistance to lipopolysaccharide in human monocytes and macrophages." J Immunol **164**(12): 6193-6198.
- Eissner, G., W. Kolch, et al. (2004). "Ligands working as receptors: reverse signaling by members of the TNF superfamily enhance the plasticity of the immune system." Cytokine Growth Factor Rev **15**(5): 353-366.
- Feldmann, M. and R. N. Maini (2001). "Anti-TNF alpha therapy of rheumatoid arthritis: what have we learned?" Annu Rev Immunol **19**: 163-196.
- Filkor, K., Z. Hegedus, et al. (2013). "Genome wide transcriptome analysis of dendritic cells identifies genes with altered expression in psoriasis." PLoS One **8**(9): e73435.
- Gaur, U. and B. B. Aggarwal (2003). "Regulation of proliferation, survival and apoptosis by members of the TNF superfamily." Biochem Pharmacol **66**(8): 1403-1408.
- Gordon, S. and P. R. Taylor (2005). "Monocyte and macrophage heterogeneity." Nat Rev Immunol **5**(12): 953-964.
- Grell, M., E. Douni, et al. (1995). "The transmembrane form of tumor necrosis factor is the prime activating ligand of the 80 kDa tumor necrosis factor receptor." Cell **83**(5): 793-802.

- Horiuchi, T., H. Mitoma, et al. (2010). "Transmembrane TNF-alpha: structure, function and interaction with anti-TNF agents." Rheumatology (Oxford) **49**(7): 1215-1228.
- Hotamisligil, G. S., N. S. Shargill, et al. (1993). "Adipose expression of tumor necrosis factor-alpha: direct role in obesity-linked insulin resistance." Science **259**(5091): 87-91.
- Hsu, L. and A. W. Armstrong (2013). "Anti-drug antibodies in psoriasis: a critical evaluation of clinical significance and impact on treatment response." Expert Rev Clin Immunol **9**(10): 949-958.
- Hussain, S. P. and C. C. Harris (2007). "Inflammation and cancer: an ancient link with novel potentials." Int J Cancer **121**(11): 2373-2380.
- Jeon, S. T., W. J. Kim, et al. (2010). "Reverse signaling through BAFF differentially regulates the expression of inflammatory mediators and cytoskeletal movements in THP-1 cells." Immunol Cell Biol **88**(2): 148-156.
- Juhász, K., K. Buzas, et al. (2013). "Importance of reverse signaling of the TNF superfamily in immune regulation." Expert Rev Clin Immunol **9**(4): 335-348.
- Juhász, K., A. Zvara, et al. (2013). "Casein kinase 2-interacting protein-1, an inflammatory signaling molecule interferes with TNF reverse signaling in human model cells." Immunol Lett **152**(1): 55-64.
- Kane, S. V. and L. A. Acquah (2009). "Placental transport of immunoglobulins: a clinical review for gastroenterologists who prescribe therapeutic monoclonal antibodies to women during conception and pregnancy." Am J Gastroenterol **104**(1): 228-233.
- Karin, M., T. Lawrence, et al. (2006). "Innate immunity gone awry: linking microbial infections to chronic inflammation and cancer." Cell **124**(4): 823-835.
- Kisicwa, L., C. Osorio, et al. (2013). "TNFalpha reverse signaling promotes sympathetic axon growth and target innervation." Nat Neurosci **16**(7): 865-873.
- Landskron, G., M. De la Fuente, et al. (2014). "Chronic inflammation and cytokines in the tumor microenvironment." J Immunol Res **2014**: 149185.
- Lebwohl, M., E. Ast, et al. (1998). "Once-daily tazarotene gel versus twice-daily fluocinonide cream in the treatment of plaque psoriasis." J Am Acad Dermatol **38**(5 Pt 1): 705-711.
- Levine, B., J. Kalman, et al. (1990). "Elevated circulating levels of tumor necrosis factor in severe chronic heart failure." N Engl J Med **323**(4): 236-241.
- Lewis, C. E. and J. W. Pollard (2006). "Distinct role of macrophages in different tumor microenvironments." Cancer Res **66**(2): 605-612.
- Lowes, M. A., A. M. Bowcock, et al. (2007). "Pathogenesis and therapy of psoriasis." Nature **445**(7130): 866-873.
- Mahadevan, U., D. C. Wolf, et al. (2013). "Placental transfer of anti-tumor necrosis factor agents in pregnant patients with inflammatory bowel disease." Clin Gastroenterol Hepatol **11**(3): 286-292; quiz e224.
- Matera, M. G., L. Calzetta, et al. (2010). "TNF-alpha inhibitors in asthma and COPD: we must not throw the baby out with the bath water." Pulm Pharmacol Ther **23**(2): 121-128.
- Medzhitov, R. (2008). "Origin and physiological roles of inflammation." Nature **454**(7203): 428-435.
- Moh, M. C., P. A. Lorenzini, et al. (2013). "Tumor necrosis factor receptor 1 associates with CD137 ligand and mediates its reverse signaling." FASEB J **27**(8): 2957-2966.
- Moore, R. J., D. M. Owens, et al. (1999). "Mice deficient in tumor necrosis factor-alpha are resistant to skin carcinogenesis." Nat Med **5**(7): 828-831.
- Moss, M. L., S. L. Jin, et al. (1997). "Cloning of a disintegrin metalloproteinase that processes precursor tumour-necrosis factor-alpha." Nature **385**(6618): 733-736.
- Mosser, D. M. and J. P. Edwards (2008). "Exploring the full spectrum of macrophage activation." Nat Rev Immunol **8**(12): 958-969.
- Nagpal, S., J. Lu, et al. (2001). "Vitamin D analogs: mechanism of action and therapeutic applications." Curr Med Chem **8**(13): 1661-1679.
- Nesbitt, A., G. Fossati, et al. (2007). "Mechanism of action of certolizumab pegol (CDP870): in vitro comparison with other anti-tumor necrosis factor alpha agents." Inflamm Bowel Dis **13**(11): 1323-1332.

- Newton, R. C., K. A. Solomon, et al. (2001). "Biology of TACE inhibition." Ann Rheum Dis **60 Suppl 3**: iii25-32.
- Nickoloff, B. J., G. D. Karabin, et al. (1991). "Cellular localization of interleukin-8 and its inducer, tumor necrosis factor-alpha in psoriasis." Am J Pathol **138**(1): 129-140.
- Nickoloff, B. J., H. Xin, et al. (2007). "The cytokine and chemokine network in psoriasis." Clin Dermatol **25**(6): 568-573.
- O'Neill, L. A., F. J. Sheedy, et al. (2011). "MicroRNAs: the fine-tuners of Toll-like receptor signalling." Nat Rev Immunol **11**(3): 163-175.
- Onesti, J. K. and D. C. Guttridge (2014). "Inflammation based regulation of cancer cachexia." Biomed Res Int **2014**: 168407.
- Ouyang, W., S. Rutz, et al. (2011). "Regulation and functions of the IL-10 family of cytokines in inflammation and disease." Annu Rev Immunol **29**: 71-109.
- Popa, C., M. G. Netea, et al. (2007). "The role of TNF-alpha in chronic inflammatory conditions, intermediary metabolism, and cardiovascular risk." J Lipid Res **48**(4): 751-762.
- Ramadori, G., J. Van Damme, et al. (1988). "Interleukin 6, the third mediator of acute-phase reaction, modulates hepatic protein synthesis in human and mouse. Comparison with interleukin 1 beta and tumor necrosis factor-alpha." Eur J Immunol **18**(8): 1259-1264.
- Ramos-Casals, M., P. Brito-Zeron, et al. (2008). "A systematic review of the off-label use of biological therapies in systemic autoimmune diseases." Medicine (Baltimore) **87**(6): 345-364.
- Rigby, W. F. (2007). "Drug insight: different mechanisms of action of tumor necrosis factor antagonists-passive-aggressive behavior?" Nat Clin Pract Rheumatol **3**(4): 227-233.
- Schottelius, A. J., L. L. Moldawer, et al. (2004). "Biology of tumor necrosis factor-alpha- implications for psoriasis." Exp Dermatol **13**(4): 193-222.
- Sica, A. and A. Mantovani (2012). "Macrophage plasticity and polarization: in vivo veritas." J Clin Invest **122**(3): 787-795.
- Stern, R. S., E. J. Lieberman, et al. (1998). "Oral psoralen and ultraviolet-A light (PUVA) treatment of psoriasis and persistent risk of nonmelanoma skin cancer. PUVA Follow-up Study." J Natl Cancer Inst **90**(17): 1278-1284.
- Sun, M. and P. J. Fink (2007). "A new class of reverse signaling costimulators belongs to the TNF family." J Immunol **179**(7): 4307-4312.
- Szlosarek, P. W., M. J. Grimshaw, et al. (2006). "Expression and regulation of tumor necrosis factor alpha in normal and malignant ovarian epithelium." Mol Cancer Ther **5**(2): 382-390.
- Tjiu, J. W., J. S. Chen, et al. (2009). "Tumor-associated macrophage-induced invasion and angiogenesis of human basal cell carcinoma cells by cyclooxygenase-2 induction." J Invest Dermatol **129**(4): 1016-1025.
- Tracey, D., L. Klareskog, et al. (2008). "Tumor necrosis factor antagonist mechanisms of action: a comprehensive review." Pharmacol Ther **117**(2): 244-279.
- Turer, E. E., R. M. Tavares, et al. (2008). "Homeostatic MyD88-dependent signals cause lethal inflammation in the absence of A20." J Exp Med **205**(2): 451-464.
- Tutuncu, Z., A. Kavanaugh, et al. (2005). "Fcgamma receptor type IIIA polymorphisms influence treatment outcomes in patients with inflammatory arthritis treated with tumor necrosis factor alpha-blocking agents." Arthritis Rheum **52**(9): 2693-2696.
- Van Dyken, S. J. and R. M. Locksley (2013). "Interleukin-4- and interleukin-13-mediated alternatively activated macrophages: roles in homeostasis and disease." Annu Rev Immunol **31**: 317-343.
- von Haehling, S. and S. D. Anker (2013). "Cachexia vs obesity: where is the real unmet clinical need?" J Cachexia Sarcopenia Muscle **4**(4): 245-246.
- Vudattu, N. K., E. Holler, et al. (2005). "Reverse signalling of membrane-integrated tumour necrosis factor differentially regulates alloresponses of CD4+ and CD8+ T cells against human microvascular endothelial cells." Immunology **115**(4): 536-543.
- Watts, A. D., N. H. Hunt, et al. (1999). "A casein kinase I motif present in the cytoplasmic domain of members of the tumour necrosis factor ligand family is implicated in 'reverse signalling'." EMBO J **18**(8): 2119-2126.

- Wheeler, M. A., D. L. Heffner, et al. (2014). "TNF-alpha/TNFR1 signaling is required for the development and function of primary nociceptors." Neuron **82**(3): 587-602.
- Yu, M., X. Zhou, et al. (2013). "Targeting transmembrane TNF-alpha suppresses breast cancer growth." Cancer Res **73**(13): 4061-4074.
- Zachariae, H., K. Kragballe, et al. (1997). "Renal biopsy findings in long-term cyclosporin treatment of psoriasis." Br J Dermatol **136**(4): 531-535.

Tételes szerzői hozzájárulás

Alulírott Sipos Orsolya, Török Annamária a dolgozatban leírt munkafolyamatokat
közül:

- a sejt kultúra fenntartását és kezelését,
- az RNS tisztítást,
- a cDNS írást,
- az qRT-PCR vizsgálatokat

végeztük el.

Aláírás

Szeged, 2014. október 13.