



Lena ALEXOPOULOU, PhD

Group leader: Toll-like receptors in immunity

Background

Lena Alexopoulou received her B.S. degree in biology and Ph.D. degree in molecular biology from the University of Athens. She pursues her PhD at the Hellenic Pasteur Institute with George Kollias, where she studied the role of transmembrane TNF *in vivo*.

Her postdoctoral training was completed at Yale University with Richard Flavell, where she studied the role of TLRs by generating and analyzing TLR-deficient mice.

Since 2004 she is a group leader at the CIML. Her research focuses on how TLRs direct the immune response to infectious agents, inflammation and autoimmunity.

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Awards

- 1994 European Molecular Biology Organization (EMBO) fellowship
- 1999 Human Frontiers Science Program (HFSP) fellowship
- 1999 Institut National de la Santé et de la Recherche Médicale (INSERM) Poste Vert fellowship
- 2004 Chairs d'Excellence, Ministère de l'Éducation Nationale de l'Enseignement supérieur et de la Recherche
- 2004 ATIP team, Centre National de la Recherche Scientifique (CNRS)

Membership

Member of the French Society of Immunology (SFI)

Main achievements

Lena Alexopoulou has been studying the mechanisms of protection against infection and autoimmunity that are induced by the TLRs. She was the first one to reveal that TLRs are involved in viral recognition (1).

Her studies showed that TLR3 is a receptor that detects viral double-stranded RNA (1) and is involved in brain penetration of West Nile virus and neuronal injury (2), while TLR7 is responsible for sensing viral single-stranded RNA (3).

In a different set of experiments, she uncovered that TLR5 cooperates with TLR4 for providing maximal host protection upon infection with flagellated Gram-negative bacteria, such as *Salmonella typhimurium* and *Pseudomonas aeruginosa* (4).

Her latest studies uncovered an unexpected and important role for TLR8 in autoimmunity, since TLR8-deficiency in mice results in lupus nephritis due to increased TLR7 responses (5).

Selected publications

1. [Alexopoulou L](#), Holt AC, Medzhitov R, Flavell RA. Recognition of double-stranded RNA and activation of NF-kappaB by Toll-like receptor 3. *Nature*. 2001 Oct 18;413(6857):7322.
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2. Wang T, Town T, [Alexopoulou L](#), Anderson JF, Fikrig E, Flavell RA. Toll-like receptor 3 mediates West Nile virus entry into the brain causing lethal encephalitis. *Nat Med*. 2004 Dec;10(12):1366-73.
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3. Lund JM, [Alexopoulou L](#), Sato A, Karow M, Adams NC, Gale NW, Iwasaki A, Flavell RA. Recognition of single-stranded RNA viruses by Toll-like receptor 7. *Proc Natl Acad Sci U S A*. 2004 Apr 13;101(15):5598-603.
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4. Feuillet V, Medjane S, Mondor I, Demaria O, Pagni PP, Galán JE, Flavell RA, [Alexopoulou L](#). Involvement of Toll-like receptor 5 in the recognition of flagellated bacteria. *Proc Natl Acad Sci U S A*. 2006 Aug 15;103(33):12487-92.
5. Demaria O, Pagni PP, Traub S, de Gassart A, Branzk N, Murphy AJ, Valenzuela DM, Yancopoulos GD, Flavell RA, [Alexopoulou L](#). TLR8 deficiency leads to autoimmunity in mice. *J Clin Invest*. 2010 Oct 1;120(10):3651-62.
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