

Natalie Stevens  
Full Member  
College of Medicine and Public Health  
Flinders Health and Medical Research Institute



## Research Biography

Natalie is a Postdoctoral Fellow in Immunology at the Lynn Systems Immunology Laboratory based at SAHMRI. Natalie works to understand the consequences of immune challenges on longterm innate immune function and pathogen defence, with a particular interest in trained immunity.

Natalie began her scientific career with a Bachelor of Laboratory Medicine (Honours) at the University of South Australia and was awarded first-class honours in 2011 for her project within the Experimental Therapeutics Laboratory, which concerned the development of antibody therapeutics for influenza treatment. She continued her studies with a PhD where she evaluated passive immunotherapy approaches targeting high mobility group box protein 1 in sepsis, with a particular focus on the impact of this therapy on post-septic immunosuppression. In 2016 Natalie took on a postdoctoral role at the University of South Australia Future Industries Institute, developing antibody therapies for the treatment of skin disorders, before joining SAHMRI in 2019.

## Qualifications

Bachelor (Honours), Bachelor of Laboratory Medicine (Hons), University of South Australia  
Award Date: 1 Mar 2012

## Research outputs

### **Colostrum is required for the postnatal ontogeny of small intestine innate lymphoid type 2 cells and successful anti-helminth defences**

Rekima, A., van den Elsen, L., Isnard, C., Smyth, D. J., Lynn, M. A., Yee, T., Stevens, N. E., Machado, S., Divakara, N., Bhasin, M., Tjiam, M. C., Rowel, C., Servant, F., Burcelin, R., Locksley, R., Maizels, R., Lynn, D. J., Egwang, T. & Verhasselt, V., Aug 2024, In: *Allergy: European Journal of Allergy and Clinical Immunology*. 79, 8, p. 2247-2251 5 p.

### **Diet at birth is critical for healthy growth, independent of effects on the gut microbiota**

van den Elsen, L. J. W., Rekima, A., Lynn, M. A., Isnard, C., Machado, S., Divakara, N., Patalwala, D., Middleton, A., Stevens, N., Servant, F., Burcelin, R., Lynn, D. J. & Verhasselt, V., 27 Jul 2024, In: *Microbiome*. 12, 1, 14 p., 139.

### **Bacille Calmette-Guérin vaccination to prevent febrile and respiratory illness in adults (BRACE): secondary outcomes of a randomised controlled phase 3 trial**

Pittet, L. F., Messina, N. L., McDonald, E., Orsini, F., Barry, S., Bonten, M., Campbell, J., Croda, J., Croda, M. G., Dalcolmo, M., Gardiner, K., Gwee, A., Jardim, B., Lacerda, M. V. G., Lucas, M., Lynn, D. J., Manning, L., Perrett, K. P., Post, J. J., Prat-Aymerich, C., & 14 othersRichmond, P. C., Rocha, J. L., Rodriguez-Baño, J., Warris, A., Wood, N. J., Davidson, A., Curtis, N., the BRACE Trial Consortium Group, Benson, S., Blake, S., Lynn, M., Stevens, N., Wesselingh, S. & McDonald, F., Jun 2024, In: *EClinicalMedicine*. 72, 10 p., 102616.

### **Specific and off-target immune responses following COVID-19 vaccination with ChAdOx1-S and BNT162b2 vaccines—an exploratory sub-study of the BRACE trial**

Messina, N., Germano, S., McElroy, R., Bonnici, R., Grubor-Bauk, B., Lynn, D. J., McDonald, E., Nicholson, S., Perrett, K., Pittet, L., Rudraraju, R., Stevens, N., Subbarao, K., Curtis, N., BRACE trial, Benson, S., Blake, S., Lynn, M., Wesselingh, S. & McDonald, F., May 2024, In: *EBioMedicine*. 103, 16 p., 105100.

### **Bacillus Calmette-Guérin vaccination for protection against recurrent herpes labialis: a nested randomised controlled trial**

Pittet, L. F., Moore, C. L., McDonald, E., Barry, S., Bonten, M., Campbell, J., Croda, J., Dalcolmo, M., Douglas, M. W., Gardiner, K., Gwee, A., Jardim, B., Lacerda, M. V. G., Lucas, M., Lynn, D. J., Manning, L., de Oliveira, R. D., Prat-Aymerich, C., Richmond, P. C., Rocha, J. L., & 11 othersRodriguez-Baño, J., Warris, A., Wood, N. J., Messina, N. L., Curtis, N., the BRACE Trial Consortium Group, Benson, S., Blake, S., Lynn, M., Stevens, N. & Wesselingh, S., Oct 2023, In: *EClinicalMedicine*. 64, 11 p., 102203.

**No evidence of durable trained immunity after two doses of adenovirus-vectored or mRNA COVID-19 vaccines**

Stevens, N. E., Ryan, F. J., Messina, N. L., Blake, S. J., Norton, T. S., Germano, S., James, J., Eden, G. L., Tee, Y. C., Lynn, M. A., Botten, R., Barry, S. E., Curtis, N. & Lynn, D. J., 1 Sept 2023, In: *Journal of Clinical Investigation*. 133, 17, 2 p., e171742.

**A systems immunology study comparing innate and adaptive immune responses in adults to COVID-19 mRNA and adenovirus vectored vaccines**

Ryan, F. J., Norton, T. S., McCafferty, C., Blake, S. J., Stevens, N. E., James, J., Eden, G. L., Tee, Y. C., Benson, S. C., Masavuli, M. G., Yeow, A. E. L., Abayasingam, A., Agapiou, D., Stevens, H., Zecha, J., Messina, N. L., Curtis, N., Ignjatovic, V., Monagle, P., Tran, H., & 7 othersMcFadyen, J. D., Bull, R. A., Grubor-Bauk, B., Lynn, M. A., Botten, R., Barry, S. E. & Lynn, D. J., 21 Mar 2023, In: *Cell Reports Medicine*. 4, 3, 17 p., 100971.

**Immunisation with the BCG and DTPw vaccines induces different programs of trained immunity in mice**

Stevens, N. E., van Wolfswinkel, M., Bao, W., Ryan, F. J., Brook, B., Amenyogbe, N., Marshall, H. S., Lynn, M. A., Kollmann, T. R., Tumes, D. J. & Lynn, D. J., 8 Mar 2022, In: *Vaccine*. 40, 11, p. 1594-1605 12 p.

**Off-target effects of bacillus Calmette–Guérin vaccination on immune responses to SARS-CoV-2: implications for protection against severe COVID-19**

Messina, N. L., Germano, S., McElroy, R., Rudraraju, R., Bonnici, R., Pittet, L. F., Neeland, M. R., Nicholson, S., Subbarao, K., Curtis, N., the BRACE trial, Benson, S., Blake, S., Campbell, J., Dunn, A., James, J., Korman, T., Lynn, D., Lynn, M., Stevens, N., & 1 othersWesselingh, S., Jan 2022, In: *Clinical and Translational Immunology*. 11, 4, 15 p., e1387.

**The immunotoxicity, but not anti-tumor efficacy, of anti-CD40 and anti-CD137 immunotherapies is dependent on the gut microbiota**

Blake, S. J., James, J., Ryan, F. J., Caparros-Martin, J., Eden, G. L., Tee, Y. C., Salamon, J. R., Benson, S. C., Tumes, D. J., Sribnaia, A., Stevens, N. E., Finnie, J. W., Kobayashi, H., White, D. L., Wesselingh, S. L., O'Gara, F., Lynn, M. A. & Lynn, D. J., 21 Dec 2021, In: *Cell Reports Medicine*. 2, 12, 28 p., 100464.

**Skin Barrier and Autoimmunity—Mechanisms and Novel Therapeutic Approaches for Autoimmune Blistering Diseases of the Skin**

Stevens, N. E., Cowin, A. J. & Kopecki, Z., May 2019, In: *Frontiers in Immunology*. 10, 11 p., 1089.

**Flightless I alters the inflammatory response and autoantibody profile in an OVA-induced atopic dermatitis skin-like disease**

Kopecki, Z., Stevens, N. E., Chong, H. T., Yang, G. N. & Cowin, A. J., 10 Aug 2018, In: *Frontiers in Immunology*. 9, 10 p., 1833.

**Recombinant leucine-rich repeat flightless-interacting protein-1 improves healing of acute wounds through its effects on proliferation inflammation and collagen deposition**

Kopecki, Z., Stevens, N. E., Yang, G. N., Melville, E. & Cowin, A. J., 10 Jul 2018, In: *International Journal of Molecular Sciences*. 19, 7, 12 p., 2014.

**Therapeutic targeting of HMGB1 during experimental sepsis modulates the inflammatory cytokine profile to one associated with improved clinical outcomes**

Stevens, N. E., Chapman, M. J., Fraser, C. K., Kuchel, T. R., Hayball, J. D. & Diener, K. R., 1 Dec 2017, In: *Scientific Reports*. 7, 1, 14 p., 5850.

**CoVaccine HT™ adjuvant is superior to Freund's adjuvants in eliciting antibodies against the endogenous alarmin HMGB1**

Lakhan, N., Stevens, N. E., Diener, K. R. & Hayball, J. D., 1 Dec 2016, In: *Journal of Immunological Methods*. 439, p. 37-43 7 p.

**Preserved antiviral adaptive immunity following polyclonal antibody immunotherapy for severe murine influenza infection**

Stevens, N. E., Hatjopolous, A., Fraser, C. K., Alsharifi, M., Diener, K. R. & Hayball, J. D., 6 Jul 2016, In: *Scientific Reports*. 6, 13 p., 29154.

Depletion of high-affinity corticosteroid-binding globulin corresponds to illness severity in sepsis and septic shock; Clinical implications

Nenke, M. A., Rankin, W., Chapman, M. J., Stevens, N. E., Diener, K. R., Hayball, J. D., Lewis, J. G. & Torpy, D. J., 1 Jun 2015, In: *Clinical Endocrinology*. 82, 6, p. 801-807 7 p.

Antimicrobial Polymethacrylates Synthesized as Mimics of Tryptophan-Rich Cationic Peptides

Locock, K. E. S., Michl, T. D., Stevens, N., Hayball, J. D., Vasilev, K., Postma, A., Griesser, H. J., Meagher, L. & Haeussler, M., 15 Apr 2014, In: *ACS Macro Letters*. 3, 4, p. 319-323 5 p.

RAFT-derived antimicrobial polymethacrylates: Elucidating the impact of end-groups on activity and cytotoxicity

Michl, T. D., Locock, K. E. S., Stevens, N. E., Hayball, J. D., Vasilev, K., Postma, A., Qu, Y., Traven, A., Haeussler, M., Meagher, L. & Griesser, H. J., 2014, In: *Polymer Chemistry*. 5, 19, p. 5813-5822 10 p.

An Empirical Approach towards the Efficient and Optimal Production of Influenza-Neutralizing Ovine Polyclonal Antibodies Demonstrates That the Novel Adjuvant CoVaccine HT™ Is Functionally Superior to Freund's Adjuvant

Stevens, N. E., Fraser, C. K., Alsharifi, M., Brown, M. P., Diener, K. R. & Hayball, J. D., 23 Jul 2013, In: *PLoS One*. 8, 7, 10 p., e68895.

## **Awards**

**A human experimental model to assess whether the gut microbiota regulates specific and non-specific immune responses to vaccination**

Lynn, D., Barry, S., Stevens, N., Kollmann, T. R., Britton, W. J., Feng, C. G., Ryan, F. J., Lynn, M. & Gentgall, M.  
31/03/20 → 31/12/26