



Tey Hong Liang

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Head of Research Division, NSC

Adjunct Associate Professor, Yong Loo Lin Medicine, NUS

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Research Interests:

- Neuro-dermatology (Itch & Sweat Disorders), with Platform Capabilities in Dissolving Microneedles
- Formulations & 3D Imaging

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Biography

Dr Tey Hong Liang's clinical and research interest is in neurodermatology, which comprises itch and sweat disorders. Leveraging on his platform capabilities in dermatological formulation, skin imaging and therapeutics-embedded dissolving microneedles, his works include 10 active patent filings, 180 international publications, and 12 products to date.

Using optical clearing and 3D imaging, his team is the first to delineate the 3D neuroanatomy of the cutaneous Itch nervous system and resolved the research enigma of itch nerve fibres density in pruritic diseases. His translational research work includes the development of curative treatments for diseases without good treatment, with a patent being filed for treatment of idiopathic hypohidrosis (i.e. inability to sweat).

Clinically, he has instituted 3 novel patent-filed treatments and initiated 3 new clinical services. One of these is a first-in-the-world therapy utilising drug-embedded dissolving microneedles to treat diseases in humans.

His research-innovation-enterprise outcomes comprise 10 commercialised and 2 intra-institutional products to date. Through numerous spin-off companies, more than 1 million units of these products have been sold in multiple countries in Asia and Europe.

In education, his most notable contribution is having authored *The Black Book of Clinical Examination*. He is also an Associate Editor of *Itch*, the official journal of the International Forum for the Study of Itch, and the Editor of the *Dermatology Bulletin*, the academic publication of NSC.

Selected Publications

- Tey HL, Lim EC. The black book of Clinical Examination. *Singapore: McGraw-Hill*. 2009 [In print].
- Tey HL, Yosipovitch G. Targeted treatment for pruritus – a look into the future. *British Journal of Dermatology*. 2011; 165(1):5-17.
- Tey HL, Tan EST, Tan FGC, Tan KL, Lim ISH, Tan ASL. Reducing anxiety in pre-school children undergoing cryotherapy for cutaneous viral warts: use of a portable video player. *Archives of Dermatology*. 2012; 148(9):1001-4.
- Chia KY, Tey HL. Approach to hypohidrosis. *Journal of European Academy of Dermatology*. 2013; 27(7):799-804.

- Tan CWX, Yeo DCL, Cao T, Tan VWD, Srivastava R, Yow AP, Tan WP, Wong DWK, Tey HL. Drug-free microneedles in the treatment of keloids: a single-blinded intra-individual controlled clinical trial. *British Journal of Dermatology*. 2018; 179(6):1418-1419.
- Tan CW, Tan WD, Srivastava R, Yow AP, Wong DWK, Tey HL. Dissolving Triamcinolone-Embedded Microneedles for the Treatment of Keloids: A Single-Blinded Intra-Individual Controlled Clinical Trial. *Dermatology and Therapy*. 2019; 9(3):601-11.
- Tan Y, Ng WJ, Lee SZX, Lee B, Natkemper LA, Yosipovitch G, Ng LG, Tey HL. Three-dimensional optical clearing and imaging of pruritic atopic dermatitis and psoriasis skin reveals downregulation of epidermal innervation. *Journal of Investigative Dermatology*. 2019; 139(5):1201-4.
- Chan MMH, Lim GH, Zhao X, Tey HL. Isolated hypohidrosis – pathogenesis and treatment. *The European Journal of Dermatology*. 2020. doi: 10.1684/ejd.2020.3931.
- Tan Y, Zhang YN, Yu X, Lee BTK, Ng LG, Tey HL. Three-dimensional neuroanatomy of the intra-epidermal nervous system. *British Journal of Dermatology*. 2020; 183(1):174-176.
- Tan Y, Chiam CPL, Zhang Y, Tey HL, Ng LG. Research Techniques Made Simple: Optical clearing and three-dimensional volumetric imaging of skin biopsies. *Journal of Investigative Dermatology*. 2020; 140(7):1305-1314.e1.

Notable Research Awards & Grants From Past 5 Years

Name of Awards & Grants	Year Obtained
National Medical Research Council Transition Award (TA)	2015
Singapore Health and Biomedical Congress Singapore Clinician Investigator Award (Gold)	2017
IJDVL International Award for Best Letter to Editor	2018 & 2017
National Healthcare Group Outstanding Citizenship Award	2018
National Medical Research Council Clinician Scientist Award (CSA) Investigator Category	2018
National Healthcare Group Innovator of the Year Award	2020

Translating Research Into Healthcare

- Barney, Kung Fu Panda help kids get warts off. *Reuters Health*. Published 22 June 2012. <https://www.reuters.com/article/us-barney-panda-warts-idUSBRE85K1NT20120621>
- The made-for-Asia itch-relieving cream that's spreading around world, and the Singapore doctor behind it. *South China Morning Post*. Published 4 Dec 2016. <https://www.scmp.com/lifestyle/health-beauty/article/2051189/made-asia-itch-relieving-cream-thats-spreading-around-world>
- National Skin Centre invented new treatments to help patients sweat. *Lian He Zao Bao*. Published 13 October 2017. <https://www.zaobao.com.sg/news/singapore/story20171013-802513>
- Sweat pays off as skin doctor wins top healthcare award. *The Straits Times*. Published 12 May 2018. <https://www.straitstimes.com/singapore/sweat-pays-off-as-skin-doctor-wins-top-healthcare-award>
- Skin Specialist goes the extra mile to ease his patients' woes. *The Straits Times*. Published 25 June 2018. <https://www.straitstimes.com/singapore/health/skin-specialist-goes-the-extra-mile-to-ease-his-patients-woes>

- National Skin Centre unveils patch treatment for keloid scars. *Channel News Asia*. Published 5 October 2018. <https://www.channelnewsasia.com/news/singapore/national-skin-centre-painless-treatment-patch-keloid-scars-10794630>
- Singaporean researchers invent the world's first microneedles treatment. *Lian He Zao Bao*. Published 6 October 2018. <https://www.zaobao.com.sg/znews/singapore/story20181006-896776>