Biographical Sketch

Dr. Lonberg is currently an Executive in Residence at Canaan Partners. Prior to Canaan, he was Senior Vice President, Oncology Discovery Biology, at Bristol-Myers Squibb, where he led drug discovery efforts for both targeted and immuno-oncology agents. Dr. Lonberg began his career in the biotechnology/ pharmaceutical industry, leading the GenPharm International research group that developed genetically engineered strains of mice with germline configuration human immunoglobulin genes. These transgenic animals have been used to discover more than three dozen clinical-stage human sequence antibodies, including 15 FDA-approved products (golimumab, ustekinumab, ofatumumab, canakinumab, ipilimumab, nivolumab, secukinumab, daratumumab, bezlotoxumab, olaratumab, burosumab, teprotumumab, amivantamab, anifrolumab, and relatlimab). GenPharm International was acquired by Medarex in 1997, and then by Bristol-Myers Squibb in 2009. In 1998, Dr. Lonberg's drug discovery group at Medarex began to focus on antibody therapies that target and modulate immune-attenuating pathways to activate patient immune responses to cancer cells (so-called "checkpoint blockade" therapies). Ipilimumab, which began clinical testing in 2000, was the first-ever checkpoint blockade cancer therapy to enter clinical development and to gain regulatory approval. Ipilimumab, approved in 2011, was also the first drug to demonstrate, in a randomized clinical trial, a survival benefit for patients with metastatic melanoma. A second checkpoint blockade cancer therapeutic, nivolumab, entered clinical development in 2006 and gained regulatory approval in 2014. A third checkpoint blockade cancer therapeutic, relatlimab, entered clinical development in 2013 and gained regulatory approval as a combination product with nivolumab in 2022. Dr. Lonberg received his PhD in Biochemistry and Molecular Biology from Harvard University (Cambridge, MA) in 1985, where he studied under Dr. Walter Gilbert. He was a postdoctoral fellow at Memorial Sloan Kettering Cancer Center (New York, NY) and was elected to the National Academy of Engineering in 2015.

JHU 2002
Merck Sharp v. Johns Hopkins
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Curriculum Vitae

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Home Address:	168 Bardet Rd Woodside, CA 94062
Work Address:	Canaan Partners 2765 Sand Hill Rd Menlo Park, CA 94025
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Education:

Undergraduate:	**1974-1977**	**Reed College**
	1977-1978	**University of Oregon**
	1978-1979	**Reed College (no degree)**
Graduate:	**1979-1985**	**Harvard University, Ph.D., March 1985**
Postdoctoral:	**1985-1989**	**Sloan-Kettering Institute for Cancer Research**

Employment:

1990-1994	**Senior Scientist** **GenPharm International, Mountain View, CA**
1994-1997	**Director, Molecular Biology** **GenPharm International, Palo Alto, CA**
1998-2000	**Vice President, Scientific Director** **GenPharm International, San Jose, CA**
2000-2009	**Senior Vice President, Scientific Director** **Medarex, Milpitas, CA**
2009-2019	**Senior Vice President, Oncology Discovery Biology** **Bristol-Myers Squibb, Redwood City, CA** **& Interim Head Oncology Exploratory Clinical Development March, 2012-January, 2013**
2019-present	**Executive in Residence, Canaan Partners** **Menlo Park, CA**

Boards:

2019-present	**Synthekine, Inc., Board of Directors & Scientific Advisory Board**

2019-present	**Bicara Therapeutics, Chairman, Board of Directors**
2020-2023	**Evolveimmune Therapeutics, Inc., Scientific Advisory Board**
2020-present	**Bolt Biotherapeutics, Inc., Scientific Advisory Board**
2020-present	**Biograph55, Board of Directors**
2020-present	**Compugen, Ltd., Scientific Advisory Board**
2021-present	**ThirtyFiveBio, Board of Directors**
2022-present	**Normunity, Scientific Advisory Board**

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Lingwood D, Schmidt AG. 2022. An epitope-enriched immunogen expands responses to a conserved viral site. Cell Rep 41: 111628

Awards, Grants, & Memberships:

National Science Foundation Predoctoral Fellowship,	1979-1982
American Cancer Society Postdoctoral Fellowship,	1985-1988
National Institutes of Health Postdoctoral Fellowship,	1988-1989
National Institutes of Health SBIR Grant (phases I & II),	1991-1994
Member, National Academy of Engineering	2015-present

Issued Patents (*USPTO only*):

1. **H.Meade and N. LONBERG** (1989) Isolation of exogenous recombinant proteins from the milk of transgenic mammals. *U.S. Patent* #4,873,316.

2. **N. LONBERG and R. Kay** (1996) Transgenic non-human animals capable of producing heterologous antibodies. *U.S. Patent* #5,545,806.

3. **N. LONBERG and R. Kay** (1996) Transgenic non-human animals capable of producing heterologous antibodies of various isotypes. *U.S. Patent* #5,569,825.

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5. **N. LONBERG and R. Kay** (1997) Transgenic non-human animals capable of producing heterologous antibodies. *U.S. Patent* #5,633,425.

6. **N. LONBERG and R. Kay** (1997) Transgenic non-human animals capable of producing heterologous antibodies of various isotypes. *U.S. Patent* #5,661,016.

7. **N. LONBERG and R. Kay** (1997) Transgenic non-human animals capable of producing heterologous antibodies. *European. Patent* #0 814 159 A2

8. **H. Meade and N. LONBERG** (1998) Transgenic non-human mammal milk. *U.S. Patent* #5,750,172.

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15. **N. LONBERG and R. Kay** (2001) High affinity human antibodies and human antibodies against digoxin. *U.S. Patent* #6,255,458.

16. **N. LONBERG and R. Kay** (2001) Transgenic non-human animals capable of producing heterologous antibodies. *U.S. Patent* #6,300,129.

17. **J. Buechler, G. Valkirs, J. Gray, and N. LONBERG** (2004) Human antibodies as diagnostic reagents. *U.S. Patent* #6,680,209.

18. **J. Buechler, G. Valkirs, J. Gray, and N. LONBERG** (2004) Human antibodies. *U.S. Patent* #6,794,132. **A. Korman, E. Halk, N. LONBERG, Y. Deo, and T. Keler** (2006) Human CTLA-4 antibodies. *U.S. Patent* #6,984,720.

19. **K. Tomizuka, I. Ishida, N. LONBERG, E. Halk** (2006) Transgenic transchromosomal rodents for making human antibodies. *U.S. Patent* #7,041,870.

20. **N. LONBERG and R. Kay** (2006) Transgenic non-human animals capable of producing heterologous antibodies. *U.S. Patent* #7,041,871.

21. **N. LONBERG, R. Kay, and D, Fishwild** (2006) High affinity human antibodies and human antibodies against human antigens. *U.S. Patent* #7,084,260.

22. **N. LONBERG, J. Buechler, J. Gray, and G. Valkirs** (2006) Human antibodies. *U.S. Patent* #7,135,287.

23. **J. Buechler, G. Valkirs, J. Gray, and N. LONBERG** (2007) Human antibodies as detection reagents. *U.S. Patent* #7,189,515.

24. **N. LONBERG and R. Kay** (2009) Transgenic non-human animals for producing chimeric antibodies. *U.S. Patent* #7,501,552.

25. **K. Tomizuka, I. Ishida, N. LONBERG, and E. Halk** (2009) Transgenic transchromosomal rodents for making human antibodies. *U.S. Patent* #7,576,258.

26. **A. Korman, E. Halk, N. LONBERG, Y. Deo, and T. Keler** (2009) Human CTLA-4 antibodies and their uses. *U.S. Patent* #7,605,238.

27. **N. LONBERG, R. Kay, and D, Fishwild** (2010) Heterologous antibodies which bind CD4. *U.S. Patent* #7,722,873.

28. **K. Tomizuka, I. Ishida, N. LONBERG, and E. Halk** (2010) Transgenic transchromosomal rodents for making human antibodies. *U.S. Patent* #7,816,578.

29. **A. Korman, E. Halk, N. LONBERG, Y. Deo, and T. Keler** (2011) Human CTLA-4 antibodies and their uses. *U.S. Patent* #8,017,114.

30. **N. LONBERG and R. Kay** (2012) Transgenic non-human animals for producing chimeric antibodies. *U.S. Patent* #8,158,419.

31. **N. LONBERG, R. Kay, and D, Fishwild** (2012) Heterologous antibodies which bind CD4. *U.S. Patent* #8,231,877.

32. **N. LONBERG and R. Kay** (2012) Transgenic non-human animals for producing chimeric antibodies. *U.S. Patent* #8,293,480.

33. **A. Korman, E. Halk, N. LONBERG, Y. Deo, and T. Keler** (2012) Human CTLA-4 antibodies and their uses. *U.S. Patent* #8,318,916.

34. **L. Chen, S. Gangwar, V. Guerlavais, N. LONBERG, Q. Zhang** (2014) Chemical linkers with single amino acids and conjugates thereof. *U.S. Patent* #8,664,407.

35. **A. Korman, E. Halk, N. LONBERG, Y. Deo, and T. Keler** (2014) Human CTLA-4 antibodies and their uses. *U.S. Patent* #8,784,815.

36. **K. Tomizuka, I. Ishida, N. LONBERG, and E. Halk** (2014) Transgenic transchromosomal rodents for making human antibodies. *U.S. Patent* #8,835,712.

37. **C. Wang, N. LONBERG, A. Korman, M. Selby, M. Srinivasan, K. Henning, M. Han, G. Chen, R. Huang, I. Chakraborty, H. Huang, S. Wong, H. Li** (2016) Antibodies against glucocorticoid-induced tumor necrosis factor receptor (GITR) and uses thereof. *U.S. Patent* #9,228,016.

38. **K. Tomizuka, I. Ishida, N. LONBERG, and E. Halk** (2016) Transgenic transchromosomal rodents for making human antibodies. *U.S. Patent* #9,426,970.

39. **N. LONBERG and M. Srinivasan** (2016) Optimization of antibodies that bind lymphocyte activation gene-3 (LAG-3), and uses thereof. *U.S. Patent* #9,505,839.

40. **N. LONBERG, A. Korman, B. Barnhart, M. Selby, A. Yamniuk, M. Srinivasan, K. Henning, M. Lei, E. Sega, A. Goodenough, M. Jure-Kunkel, G. Chen, J. Sack, R. Huang, M. Corbett, J. Myers, L. Schweitzer, S. Hatcher, H. Huang, P. Zhang** (2017) Antibodies against CD73. *U.S. Patent* #9,605,080.

41. **D. Rohrer, A. Black, and N. LONBERG** (2017) HCO32 and HCO27 and related examples. *U.S. Patent* #9,693,539.

42. **C. Wang, N. LONBERG, A. Korman, M. Selby, M. Srinivasan, K. Henning, M. Han, G. Chen, R. Huang, I. Chakraborty, H. Huang, S. Wong, H. Li** (2017) Antibodies against glucocorticoid-induced tumor necrosis factor receptor (GITR) and uses thereof. *U.S. Patent* #9,745,379.

43. **A. Norman, W. Ball, N. LONBERG, and D. Williams** (2017) Compositions and methods for treating cocaine-related disorders. *U.S. Patent* #9,758,593.

44. **K. Tomizuka, I. Ishida, N. LONBERG, and E. Halk** (2018) Transgenic transchromosomal rodents for making human antibodies. *U.S. Patent* #10,076,103.

45. **A. Korman, N. LONBERG, D. Fontana, A. Guterrez, M. Selby, and K. Lewis** (2018) Combination of anti-LAG-3 antibodies and anti-PD-1 antibodies to treat tumors. *U.S. Patent* #10,081,681.

46. **N. LONBERG, A. Korman, B. Barnhart, A. Yamniuk, M. Srinivasan, K. Henning, M. Lei, E. Sega, A. Goodenough, M. Jure-Kunkel, G. Chen, J. Sack, R. Huang, M. Corbett, J. Myers, L. Schweitzer, S. Hatcher, H. Huang, P. Zhang** (2018) Antibodies against CD73 and uses thereof. *U.S. Patent* #10,100,129.

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48. **N. LONBERG and M. Srinivasan** (2019) Optimization of antibodies that bind lymphocyte activation gene-3 (LAG-3), and uses thereof. *U.S. Patent* #10,266,591.

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52. **A. Norman, W. Ball, N. LONBERG, and D. Williams** (2019) Compositions and methods for treating cocaine-related disorders. *U.S. Patent* #10,501,556.

53. **N. LONBERG, A. Korman, M. Selby, B. Barnhart, A. Yamniuk, M. Srinivasan, K. Henning, M. Han, M. Lei, L. Schweitzer, S. Hatcher, A. Rajpal** (2020) Antibodies comprising modified heavy constant regions. *U.S. Patent* #10,653,791.

54. **X.-T. Wang, A. Olufemi, A. Lewin, A. Korman, M. Selby, C. Wang, H. Huang, K. Henning, N. LONBERG, M. Srinivasan, M. Han, G. Chen, R. Huang, I. Chakraborty, S. Wong, H. Li** (2020) Anti-GITR antibodies for cancer diagnostics. *U.S. Patent* # 10,690,674.

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57. **A. Korman, N. LONBERG, D. Fontana, A. Guterrez, M. Selby, and K. Lewis** (2022) Combination of anti-LAG-3 antibodies and anti-PD-1 antibodies to treat tumors. *U.S. Patent* # 11,274,152.

58. **L. Presta, P. Tumeh, N. LONBERG, and O. Duramad** (2022) Composite binding molecules targeting immunosuppressive B cells. *U.S. Patent* # 11,299,551.

59. **N. LONBERG and M. Srinivasan** (2022) Optimization of antibodies that bind lymphocyte activation gene-3 (LAG-3), and uses thereof. *U.S. Patent* # 11,345,752.

60. **N. LONBERG, A. Korman, B. Barnhart, A. Yamniuk, M. Srinivasan, K. Henning, M. Lei, E. Sega, A. Goodenough, M. Jure-Kunkel, G. Chen, J. Sack, R. Huang, M. Corbett, J. Myers, L. Schweitzer, S. Hatcher, H. Huang, P. Zhang** (2022) Antibodies against CD73. *U.S. Patent* # 11,352,440.

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