Curriculum Vitae

Personal Information

First name / Surname	**RALF M. LEONHARDT, PH.D. (DR. RER. NAT.)**
Address	**YALE UNIVERSITY, SCHOOL OF MEDICINE** **DEPARTMENT OF IMMUNOBIOLOGY** **300 CEDAR STREET, ROOM : TAC S670** **NEW HAVEN, CT 06519 / USA**
Telephone	**+1–(203)–785–5042** (work) Email **Ralf.Leonhardt@yale.edu** **XXXXXXXXXXXXX** (mobile)
Private address	**XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX**
	Place of birth **Cologne / Germany**
Nationality	**GERMAN** Date of birth **22nd April 1975**

Postdoctoral Research

August 2009 – present (Associate Research Scientist)
April 2006 – July 2009 (Postdoctoral Fellow/Associate)

2006 - present

Associate Research Scientist at Yale University School of Medicine, Department of Immunobiology in the laboratory of Prof. Dr. Peter Cresswell

Topics of Research :

- Processing and assembly of PMEL into melanosomal amyloid
- Melanosome biogenesis and maturation
- Unconventional MHC I & CD1d antigen presentation in tumors
- Assembly and function of TAP and the peptide-loading complex
- Modulation of *Chlamydia*-host interactions by tryptophan depletion

Doctoral Thesis

January 2002 – December 2005
Disputation held on 8th December 2005

2002 - 2005

Doctoral Thesis at the Institute for Genetics, University of Cologne in the laboratory of Priv.-Doz. Dr. Michael R. Knittler

Title of the thesis :
Molecular and Functional Characterization of Early and Late Checkpoints in the Quality Control of MHC Class I-Restricted Antigen Presentation

Language of the thesis : English

Dissertation graded with "mit Auszeichnung" (meaning **"with highest honours"**, **"summa cum laude"**)

Disputation graded with "mit Auszeichnung" (meaning **"with highest honours"**, **"summa cum laude"**)

Diploma Thesis

February 2001 - December 2001
Diploma received on 18th December 2001

2001

Diploma Thesis at the Institute for Genetics, University of Cologne in the laboratory of Priv.-Doz. Dr. Christine Kocks

Title of the thesis :
Mutagenese des Phosphatidylinositol-3,4,5-trisphosphat-bindenden Motivs aus ActA, einem Oberflächenprotein von *Listeria monocytogenes*

(***engl.*** Mutagenesis of the phosphatidylinositol-3,4,5-trisphosphate binding motif in ActA, a surface protein of *Listeria monocytogenes*)

Language of the thesis : German

Diploma thesis graded with "**sehr gut**" (meaning "**excellent**")

Studies of Biology

October 1995 - February 2001

1995-2001

Studies of Biology at the University of Cologne

Grades in the final oral exams (2nd – 13th February 2001) **:**

Genetics	"**sehr gut**" (meaning "**excellent**")
Developmental Biology	"**sehr gut**" (meaning "**excellent**")
Organic Chemistry	"**sehr gut**" (meaning "**excellent**")

Diploma :
Majored in Genetics. Graduated as "Diplom-Biologe" (advanced degree in biology)

Diploma graded with "**sehr gut**" (meaning "**excellent**")

Civilian National Service

September 1994 - September 1995

1994-1995

Civilian National Service at the Johanniter Unfallhilfe e.V.

Abitur (A-levels)

August 1985 – June 1994

1985-1994

Abitur (german school leaving certificate and general qualification for university entrance) awarded by the Gymnasium Thusneldastraße (Grammar School)

Main subjects : Biology and Mathematics

Abitur graded with 1.7 (fourth best grade in a class of 82 students)

Postdoctoral Fellowship

July 2009 – June 2012

2009

Postdoctoral Fellowship of the Cancer Research Institute
Cancer Research Institute (CRI)
National Headquarters
One Exchange Plaza
55 Broadway, New York, NY 10006 / USA
Tel.: +1-800-992-2623
www.cancerresearch.org

Project Title: Characterization of TAP- and Tapasin-Independent MHC Class I-Restricted Melanoma Epitopes

Grants

May 2008 – present

2016

May 2016 – present

NIH/NIAMS R21 Grant (1R21 AR068518-01A1) (**2016**)
(I am the sole Principal Investigator)

Project Title: Mechanism of amyloid formation during melanosome biogenesis (\$275,000 over two years)

Impact Score: 22 / Percentile: 8.0

Moreover, I have contributed significantly to the conception & writing of the following grants (not submitted in my name)**:**

2008 Yale SPORE in Skin Cancer Grant (5P50 CA121974) (**2008**)

2011 NIH R01 Grant (R01 AI097206) (**2011**)

2014 Renewal of NIH R01 Grant (R01 AI059167) (**2014**)

Service

July 2008 – present

Ad Hoc Reviewer (independent) for the following journals:

2008 FEMS Microbiology Letters

2013 Pigment Cell & Melanoma Research

2013-2016 The Journal of Biological Chemistry

2016 PLoS One

2016 Toxins

2016 International Journal of Molecular Sciences

Current Scientific Cooperations

Professor Dr. Benoît J. van den Eynde, M.D., Ph.D.
& Nathalie Vigneron, Ph.D.
de Duve Institute and Université Catholique de Louvain and
Ludwig Institute for Cancer Research
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Dr. Athanasia Tzika
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Laboratory of Artificial & Natural Evolution (LANE)
Sciences III Building
30 Quai Ernest-Ansermet
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Professor Dr. Karen Taraszka Hastings, M.D., Ph.D.
University of Arizona
College of Medicine Phoenix
Department of Basic Medical Sciences
425 North 5th Street
ABC1 Room 326
Phoenix, AZ 85004
USA
Tel.: +1-(602)-827-2106
khasting@email.arizona.edu

Research Papers and Review Articles

2017	Hee J.S., Mitchell S.M., Liu X. and **Leonhardt R.M.**[‡], Melanosomal formation of PMEL core amyloid is driven by aromatic residues. *Scientific Reports* (**2017**), Vol. 7:44064, doi: 10.1038/srep44064, 1-15 [‡] sole senior and corresponding author
2015	Rufer E., Kägebein D., **Leonhardt R.M.** and Knittler M.R., Hydrophobic interactions are key to drive the association of tapasin with peptide transporter subunit TAP2. *J Immunol* (**2015**), Vol. 195(11), 5482-5494
2014	**Leonhardt R.M.**[‡], Abrahimi P., Mitchell S.M. and Cresswell P., Three tapasin docking sites in TAP cooperate to facilitate transporter stabilization and heterodimerization. *J Immunol* (**2014**), Vol. 192(5), 2480-2494 [‡] sole corresponding author
2013	**Leonhardt R.M.**[‡], Vigneron N., Hee J.S., Graham M. and Cresswell P., Critical residues in the PMEL/Pmel17 N-terminus direct the hierarchical assembly of melanosomal fibrils. *Mol Biol Cell* (**2013**), Vol. 24(7), 964-981 [‡] sole corresponding author
2012a	Panter M.S., Jain A., **Leonhardt R.M.**, Ha T. and Cresswell P., Dynamics of major histocompatibility complex class I association with the human peptide-loading complex. *J Biol Chem* (**2012**), Vol. 287(37), 31172-31184
2012b	Stroobant V., Demotte N., Luiten R.M., **Leonhardt R.M.**, Cresswell P., Bonehill A., Michaux A., Ma W., Mulder A., Van den Eynde B.J., Van der Bruggen P. and Vigneron N., Inefficient exogenous loading of a tapasin-dependent peptide onto HLA-B*44:02 can be improved by acid treatment or fixation of target cells. *Eur J Immunol* (**2012**), Vol. 42(6), 1417-1428
2011a	Dimberu P.M. and **Leonhardt R.M.**[‡], Cancer immunotherapy takes a multi-faceted approach to kick the immune system into gear. Yale J Biol Med (2011), Vol. 84(4), 371-380 [‡] corresponding author

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Research Papers and Review Articles

2011b	Zhang W., Wearsch P.A., Zhu Y., **Leonhardt R.M.** and Cresswell P., A role for UDP-glucose glycoprotein glucosyltransferase in expression and quality control of MHC class I molecules. *Proc Natl Acad Sci U S A* (**2011**), Vol. 108(12), 4956-4961
2011c	Heller C., Weisser T., Mueller-Schickert A., Rufer E., Hoh A., **Leonhardt R.M.** and Knittler M.R., Identification of key amino acid residues that determine the ability of high risk HPV16-E7 to dysregulate major histocompatibility complex class I expression. *J Biol Chem* (**2011**), Vol. 286(13), 10983-10997
2011d	**Leonhardt R.M.**‡, Vigneron N., Rahner C. and Cresswell P., Proprotein convertases process Pmel17 during secretion. *J Biol Chem* (**2011**), Vol. 286(11), 9321-9337 ‡ sole corresponding author
2010a	**Leonhardt R.M.**‡, Vigneron N., Rahner C., Van den Eynde B.J. and Cresswell P., Endoplasmic reticulum export, subcellular distribution, and fibril formation by Pmel17 require an intact N-terminal domain junction. *J Biol Chem* (**2010**), Vol. 285(21), 16166-16183 ‡ sole corresponding author
2010b	**Leonhardt R.M.**, Fiegl D., Rufer E., Karger A., Bettin B. and Knittler M.R., Post-endoplasmic reticulum rescue of unstable MHC class I requires proprotein convertase PC7. *J Immunol* (**2010**), Vol. 184(6), 2985-2998
2009	Vigneron N., Peaper D.R., **Leonhardt R.M.** and Cresswell P., Functional significance of tapasin membrane association and disulfide linkage to ERp57 in MHC class I presentation. *Eur J Immunol* (**2009**), Vol. 39(9), 2371-2376
2007a	Rufer E.*, **Leonhardt R.M.*** and Knittler M.R., Molecular architecture of the TAP-associated MHC class I-peptide-loading complex. *J Immunol* (**2007**), Vol. 179(9), 5717-5727 * coequal first authors
2007b	**Leonhardt R.M.**‡, Lee S.-J., Kavathas P.B. and Cresswell P., Severe tryptophan starvation blocks onset of conventional persistence and reduces reactivation of Chlamydia trachomatis. *Infect Immun* (**2007**), Vol. 75(11), 5105-5117 ‡ sole corresponding author

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Research Papers and Review Articles

2006	Keusekotten K., **Leonhardt R.M.**, Ehses S., and Knittler M.R., Biogenesis of functional antigenic peptide transporter TAP requires assembly of pre-existing TAP1 with newly synthesized TAP2. *J Biol Chem* (**2006**), Vol. 281(26), 17545-17551
2005a	**Leonhardt R.M.**, Keusekotten K., Bekpen C. and Knittler M.R., Critical role for the tapasin-docking site of TAP2 in the functional integrity of the MHC class I-peptide loading complex. *J Immunol* (**2005**), Vol. 175(8), 5104-5114
2005b	Ehses S., **Leonhardt R.M.**, Hansen G. and Knittler M.R., Functional role of C-terminal sequence elements in the transporter associated with antigen processing. *J Immunol* (**2005**), Vol. 174(1), 328-339
2003	**Leonhardt R. M.** and Knittler M.R., "Erste Klasse-Ticket" für Antigene: Zelluläre Stationen der MHC Klasse I vermittelten Antigenpräsentation. *BioSpektrum* (**2003**), Vol. 9(1), 23-26 (Article in german) (***engl.*** „First class ticket" for antigens: Cellular steps in the MHC class I-mediated antigen presentation)

Attended Conferences

2016a	**Panamerican Society for Pigment Cell Research (PASPCR) Annual Meeting 2016**, Seeing the light: Pigment cells, their responses, and the generation of diversity, October 5 – October 8, Baltimore, Maryland, USA **Speaker:** **Leonhardt R.M.**, Hee J.S., Liu X., and Cresswell P., "Aromatic residues drive melanosomal formation of PMEL core amyloid"
2016b	**Symposium Jonathan Howard – A Life in Science**, July 1, Cologne, Germany **Speaker:** "Mechanism of melanosomal amyloid formation: Role of the PMEL N-terminus in regulated assembly of fibrils"
2016c	**Gordon Research Conference**, Lysosomes & Endocytosis, June 12 – June 17, Andover, New Hampshire, USA **Poster presentation:** **Leonhardt R.M.**, Hee J.S., Liu X., and Cresswell P., "Aromatic residues drive melanosomal formation of PMEL core amyloid"
2016d	**Gordon Research Seminar**, Lysosomes & Endocytosis, June 11 – June 12, Andover, New Hampshire, USA **Discussion leader and poster presentation:** **Leonhardt R.M.**, Hee J.S., Liu X., and Cresswell P., "Aromatic residues drive melanosomal formation of PMEL core amyloid"
2016e	**Cellular Immunotherapy Summit at Yale**, March 18, New Haven, Connecticut, USA

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Attended Conferences

2015a	**FASEB Science Research Conference**, Molecular mechanisms and physiological consequences of protein aggregation, June 21 – June 26, West Palm Beach, Florida, USA **Speaker and poster presentation:** **Leonhardt R.M.**, Vigneron N., Hee J.S., Graham M., and Cresswell P., "Mechanism of melanosomal amyloid formation: Identifying the amyloid core and discovery of a regulatory role of the PMEL N-terminus in fibril assembly"
2015b	**Yale Microscopy Workshop**, Visualizing sub-cellular structures in 3D electron tomography and cryo-EM & light sheet microscopy, June 2 – June 4, New Haven, Connecticut, USA
2014a	**Gordon Research Conference**, Lysosomes & Endocytosis, June 15 – June 20, Andover, New Hampshire, USA **Poster presentation:** **Leonhardt R.M.**, Vigneron N., Hee J.S., Graham M., and Cresswell P., "Critical residues in the PMEL N-terminus direct the hierarchical assembly of melanosomal fibrils"
2014b	**Gordon Research Seminar**, Lysosomes & Endocytosis, June 14 – June 15, Andover, New Hampshire, USA **Speaker and poster presentation:** **Leonhardt R.M.**, Vigneron N., Hee J.S., Graham M., and Cresswell P., "Critical residues in the PMEL N-terminus direct the hierarchical assembly of melanosomal fibrils"
2013a	**FASEB Science Research Conference**, Molecular mechanisms and physiological consequences of protein aggregation, June 23 – June 28, Big Sky, Montana, USA **Speaker and poster presentation:** **Leonhardt R.M.**, Vigneron N., Hee J.S., Graham M., and Cresswell P., "Critical residues in the Pmel17 N-terminus direct the hierarchical assembly of melanosomal fibrils"

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Attended Conferences

2013b	**Yale Microscopy Workshop**, Correlative Light Electron Microscopy, June 4 – June 6, New Haven, Connecticut, USA
2012a	**Yale Microscopy Workshop**, Optogenetics, June 26 – June 28, New Haven, Connecticut, USA
2012b	**Gordon Research Conference**, Lysosomes & Endocytosis, June 17 – June 22, Andover, New Hampshire, USA **Poster presentation:** **Leonhardt R.M.**, Vigneron N., Hee J.S., Graham M., and Cresswell P., "Critical residues in the Pmel17 N-terminal region (NTR) are essential for melanosomal fibril formation and act through the stabilization of downstream fibrillogenic fragments"
2012c	**Gordon Research Seminar**, Lysosomes & Endocytosis, June 16 – June 17, Andover, New Hampshire, USA **Poster presentation:** **Leonhardt R.M.**, Vigneron N., Hee J.S., Graham M., and Cresswell P., "Critical residues in the Pmel17 N-terminal region (NTR) are essential for melanosomal fibril formation and act through the stabilization of downstream fibrillogenic fragments"
2011a	**Cancer Research Institute (CRI) 19th International Cancer Immunotherapy Symposium**, Cancer Immunotherapy 2011: Immune effector mechanisms in tumor immunity, October 3 – October 5, New York, New York, USA **Poster presentation:** **Leonhardt R.M.**, Vigneron N., van den Eynde B.J., and Cresswell P., "TAP-independent presentation of the melanoma vaccine candidate epitope $gp100_{209-217}$ requires no gp100 sequences outside the core peptide and is sensitive to cytosolic TPP2 degradation"

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Attended Conferences

2011b	**The American Association of Immunologists (AAI) 98th Annual Meeting**, Immunology 2011, May 13 – May 17, San Francisco, California, USA **Poster presentation:** **Leonhardt R.M.**, Vigneron N., van den Eynde B.J., and Cresswell P., "TAP-independent presentation of the melanoma vaccine candidate epitope $gp100_{209-217}$ requires no gp100 sequences outside the core peptide and is sensitive to TPP2 degradation"
2011c	**Yale Cancer Center Inter-Programmatic Retreat**, Cancer Immunology & Molecular Virology, January 21, New Haven, Connecticut, USA **Poster presentation:** **Leonhardt R.M.**, Vigneron N., van den Eynde B.J., and Cresswell P., "TAP-independent presentation of the melanoma vaccine candidate epitope $gp100_{209-217}$ requires no gp100 sequences outside the core peptide and is sensitive to TPP2 degradation"
2010a	**Cancer Research Institute (CRI) 18th International Immunotherapy Symposium**, Cancer Immunotherapy 2010: Multiple functions of CD4 T cells in autoimmunity, infectious disease and cancer, October 6 – October 8, New York, New York, USA **Poster presentation:** **Leonhardt R.M.**, Vigneron N., van den Eynde B.J., and Cresswell P., "TAP-independent presentation of the melanoma vaccine candidate epitope $gp100_{209-217}$ requires no gp100 sequences outside the core peptide and is sensitive to TPP2 degradation"
2010b	**Cancer Vaccine Consortium (CVC) 11th Scientific Colloquium**, Elucidating the biology for clinical sucess of cancer vaccines, March 17 – March 19, Washington, DC, USA

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Attended Conferences

2009a	**Cancer Research Institute (CRI) 17th International Cancer Immunotherapy Symposium**, Control of Cancer Immunosuppression: The Challenge for Cancer Vaccine Development, September 30 – October 2, New York, New York, USA **Two poster presentations:** **Leonhardt R.M.**, Vigneron N., van den Eynde B.J., and Cresswell P., "Mechanisms that promote or limit TAP-independent presentation of $gp100_{209-217}$" Vigneron N.‡, **Leonhardt R.M.**‡, van den Eynde B.J., and Cresswell P., "TAP-independent presentation of antigenic peptide $gp100_{209-217}$ requires cytosolic processing" ‡ coequal first authors
2009b	**Howard Hughes Medical Institute (HHMI) Scientific Meeting**, RNA: Chemistry, functions and subcellular trafficking, March 15 – March 18, Ashburn, Virginia, USA
2006	**2nd GBP Symposium**, October 2 – October 3, Erlangen, Germany
2003	**4th FEBS Advanced Lecture Course**, ATP-binding cassette (ABC) proteins: From multidrug resistance to genetic disease, March 1 – March 8, Gosau, Austria **Poster presentation:** Bouabe H., **Leonhardt R.M.**, and Knittler M.R., "The distinct nucleotide binding states of the transporter associated with antigen processing (TAP) are regulated by the nonhomologous C-terminal tails of TAP1 and TAP2"