Combinatorial prospects of nanoparticle mediated immunotherapy of cancer

Silva, C.G. da

Dankwoord

Het tot stand brengen van dit proefschrift verenigt een bijzondere periode van wetenschappelijk onderzoek vol uitdagingen en persoonlijke wederwaardigheid. Aan alle personen die tijdens deze periode betrokken zijn geweest wil ik graag mijn dank tonen.

Luis, I would like to thank you for the opportunity to fulfill the honorable task to answer the research questions forthcoming of your formulated hypotheses. Your insight in nanomedicine is admirable and it was my privilege to have learned the intricacies of his field from you.

Ferry, graag wil ik je bedanken voor de fijne begeleiding. Het was voor mij een eer om de kleinste details van de werking van de (tumor) immunologie van je te hebben mogen leren. Daarnaast was je betrokkenheid en toewijding tot het project subliem.

Clemens, je openheid en gastvrijheid heeft ervoor gezorgd dat ik snel welkom voelde. De wetenschappelijke gespreken die wij hebben gehad heb ik als inspirerend ervaren.

Mijn beminde paranimfen Ruben en Koen. Wat een rijkdom aan mooie momenten hebben wij samen beleefd dat zich tot een vriendschap heeft gesmeed. Ruben, ik wil je graag bedanken voor de sparsessies (letterlijk, tijdens de kickboksen lessen) maar ook over de sparsessies over de wetenschappelijke resultaten. Koen, ik wil je graag bedanken voor je steun, deze heeft impact gehad. Ik koester de gekkigheid en de avonturen die wij hebben gedeeld.

Marcel, van jou heb ik de fijne praktische kneepjes van het vak geleerd en altijd kon ik bij jou terecht voor vragen of voor hulp, maar ook 'gewoon' voor een gezellig praatje of het delen van een goede grap.

Ook voor de steun en inbreng van vele andere mensen wil ik oprecht hartelijk bedanken. In het bijzonder Luana, Marieke, Chih Kit, Timo, Eric, Yuedan, Mehrman, Olena, Zili, Anton, Yang, YiYi, Dong, Pablo, Carla, Jomarien, Yaima, Raimundo, Luis, Sabine, Somayeh, Christina, Alice, YuanYuan, Sana, Ana Luiza, Taís, Katarzyna,

Alireza, Gaston, Tracy, Filippo, Fabio, Alan, Katja, Ramon, Tetje, Suzanne, Anke, Gijs, Jan Willem, Rodney, Eleni, Elham, Wendy, Elena, Nataschja, Brett, Koen, Jeroen, Guillaume, Marieke, Hreinn, Heng Sheng, Esmé, Iris, Tsolere, Thorbald en Sjoerd.

Lieve Hilde, wat zijn wij toch een goede match. Wat bof ik met je steun om dit proefschrift tot stand te laten komen. Wat een enorme liefde hebben wij voor elkaar en voor onze kinderen. Ik kan niet wachten op de vele leuke avonturen die wij nog samen in de toekomst gaan beleven.

Voorschoten, 23 maart 2021.

Curriculum Vitae

Cândido Geraldo da Silva was born on the 28th of July 1981 in Delft, the Netherlands. During his early childhood Candido emigrated with his parents and sibling to Portugal where he finished his early education. Candido later returned to the Netherlands and attained a bachelor's degree in Molecular Biology at the University of Applied Sciences Leiden combined with an extracurricular minor in beta education and an extracurricular capita selecta of the Leiden University Medical Centre bachelors' degree in the Biomedical Sciences. Candido concluded his undergraduate thesis based on an internship at the Ophthalmology department under the supervision of Dr. Mieke Versluis and Dr. Pieter van der Velden on the molecular mechanisms in uveal melanoma and targeted therapies.

In 2013 Candido graduated with a Master of Science degree in Oncology at the VU University of Amsterdam with two compulsory internships. The first internship was performed at the Pathology department from the VU University Medical Center Amsterdam under the supervision of Dr. Saskia Wilting and Prof. Dr. Renske Steenbergen on target gene identification of oncogenic microRNAs in cervical cancer. The second internship was performed at the Immunology department from the Leiden University Medical Center under the supervision of Dr. Gijs Zom and Prof. Dr. Ferry Ossendorp on peptide based anti-tumor vaccination strategies. The internship report was evaluated by Prof. Dr. Tanja de Gruijl. Under the supervision of Prof. Dr. Frits Peters, Candido concluded and published his master thesis on the role of influx transporters in the uptake of protein kinase inhibitors.

In 2014 Candido started his PhD project described in this thesis at both the Radiology and Immunology departments from the Leiden University Medical Center under the supervision of Prof. Assist. Dr. Luis Cruz and Prof. Dr. Ferry Ossendorp. Next to his PhD project, Candido enrolled to the doctoral specialization and certification in SMBWO Immunology of the Dutch Society for Immunology (NVVI) institute to acquire the credentials to become a certified immunologist. During his PhD project, Candido presented his acquired scientific results on several occasions to international scientific audiences through congresses in the Netherlands, Portugal, United Kingdom, and in Cuba, and published several scientific and review articles in the field renowned peer-reviewed scientific journals.

During his PhD project, Candido had several relevant side activities, including a two year role as a member of the board of Leids Promovendi Overleg and one year as a voluntary researcher at the think tank organization SMO Promovendi that led to the co-authorship and publication of a book aimed for policy makers as a guide for the implementation of innovation in healthcare titled 'Riding the techwave in an era of change - The healthcare guide to the future'.

Currently, Candido is working as a post-doc researcher at Prof. Assist. Dr. Luis Cruz's lab Translational Nanobiomaterials and Imaging Group at the Radiology department from the Leiden University Medical Center on several projects based on the interface of immunology, oncology and nanotechnology.

List of publications

1. Luana Zerrillo, Karthick Babu Sai Sankar Guptar, Fons A.W.M. Lefeber, Candido G. Da Silva, Federica Galli, Alan Chan, Andor Veltien, Weiqiang Dou, Roberta Censi, Piera Di Martino, Mangala Srinivas, Luis Cruz (2021). "Novel Fluorinated Poly (Lactic-Co-Glycolic acid) (PLGA) and Polyethylene Glycol (PEG) Nanoparticles for Monitoring and Imaging in Osteoarthritis". Pharmaceutics. 2021 Feb 7;13(2):235. doi: 10.3390/pharmaceutics13020235.

2. Zili Gu, Candido G. Da Silva, Koen Van der Maaden, Ferry Ossendorp, Luis J. Cruz (2020). "Liposome-based drug delivery systems in cancer immunotherapy". Pharmaceutics. 2020 Nov 4;12(11):1054. doi: 10.3390/pharmaceutics12111054.

3. CG Da Silva, MGM Camps, TMWY Li, L Zerrillo, CW Löwik, F Ossendorp, Luis J Cruz (2019). "Effective chemoimmunotherapy by co-delivery of doxorubicin and immune adjuvants in biodegradable nanoparticles". Theranostics 9 (22), 6485

4. CG Da Silva, MGM Camps, T Li, AB Chan, F Ossendorp, LJ Cruz (2019). "Co-delivery of immunomodulators in biodegradable nanoparticles improves therapeutic efficacy of cancer vaccines". Biomaterials 220, 119417

5. Jannes ten Berge, Joost Blok, Constantino Garcia Maldonado, Esther Heckendorf, Stephanie Holst-Bernal, Malou Noten, Candido da Silva, Klodiana-Daphne Tona, Daphne Truijens, Eleonoor Verlinden (2018). "Riding the techwave in an era of change". Stichting Maatschappij en Onderneming (SMO) ISBN 978-90-6962-270-5

6. CK Chung, CG Da Silva, D Kralisch, A Chan, F Ossendorp, LJ Cruz (2018). "Combinatory therapy adopting nanoparticle-based cancer vaccination with immune checkpoint blockade for treatment of post-surgical tumor recurrences". Journal of controlled release 285, 56-66

7. CG Da Silva, Godefridus J Peters, Ferry Ossendorp, Luis J Cruz (2017). "The potential of multi-compound nanoparticles to bypass drug resistance in cancer". Cancer chemotherapy and pharmacology 80 (5), 881-894

8. R Huis In't Veld, C G Da Silva, E L Kaijzel, A B Chan, L J Cruz (2017). "The Potential of nano-vehicle mediated therapy in vasculitis and multiple sclerosis". Current pharmaceutical design 23 (13), 1985-1992

9. CG Da Silva, Felix Rueda, CW Löwik, Ferry Ossendorp, Luis J Cruz (2016). "Combinatorial prospects of nano-targeted chemoimmunotherapy". Biomaterials 83, 308-320

10. Candido G Da Silva, Richard J Honeywell, Henk Dekker, Godefridus J Peters (2015). "Physicochemical properties of novel protein kinase inhibitors in relation to their substrate specificity for drug transporters". Expert opinion on drug metabolism & toxicology 11 (5), 703-717

11. PA Van Der Velden, M De Lange, CG Da Silva, M Versluis, GPM Luyten, MJ Jager (2011). "C-Met signaling and preclinical analysis of Crizotinib in uveal melanoma". Acta Ophthalmologica 89