



## **University of Groningen**

## Structure-based drug discovery aiming at human-diseases related protein targets

Gao, Kai

DOI:

10.33612/diss.133808191

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version Publisher's PDF, also known as Version of record

Publication date: 2020

Link to publication in University of Groningen/UMCG research database

Citation for published version (APA):

Gao, K. (2020). Structure-based drug discovery aiming at human-diseases related protein targets. University of Groningen. https://doi.org/10.33612/diss.133808191

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

**Take-down policy**If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): http://www.rug.nl/research/portal. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

Download date: 26-12-2020

## **A**CKNOWLEDGEMENTS

I've been imagining the current scene of summarizing this final part of thesis since long time ago. When it will be, and where am I at that moment? These remain in my head for such a long time until now when I start to manage it five year later in Shenzhen, China, where it's around 9000 km away from Groningen. The PhD journey sometimes seems extremely long, especially your project gets stuck somewhere without any clues to cross it in a cloudy and rainy winter, but sometimes it looks super short, too short to remember all the lovely faces and enjoyable moment with my friends here. This thesis cannot be completed without your kind help and suggestions from many of you.

First of all, I do appreciate all financial support from the **China Scholarship Council** (CSC) during last four years, thanks for supporting me to complete my PhD here in Groningen, Netherlands.

I would like to express my sincere gratitude to my promoter, **Prof. Alexander Dömling**, the chair of Drug Design group. I still remember that day when we Skyped online five years ago. I was interested in MCRs at that moment, and sent you an email to find a position in Drug Design. You replied me just a few hours later and asked for a Skype interview immediately. To me, it was the first time to talk to a foreign professor in English without any preparation, so you can imagine how lost I was during that 30 minutes, I squeezed my head and used all the English words I remembered. But thanks for your patience, this great adventure would never happen if you haven't supported me an offer. Although later I changed to structure biology, your guidance in project design and execution does really help me a lot and this will still help me in my later scientific careers. Thank you so much for being my best promoter.

I would also like to show my sincere gratitude to my daily supervisor, **Prof. Matthew Groves**. It's my great honour to have you as my daily supervisor in structure biology, thanks for offering me the great opportunity to do my PhD under your guidance. As you know, I came here with an organic chemistry background, so when I moved to biology, the first thing came to my mind was that: can I really survive in the following years with no biology background? As you mentioned one time later, I was so nervous on the first day when came to the office. Luckily, I have your full supports and patience, and our weekly meetings sometimes turned to biology tutorials in the first 2 years. Your optimistic and enthusiastic suggestions always bring me back to the right way direct to my projects, and you can always find the good spot from my results. Sometimes, we're worrying about that if one day you'll run out all your optimism on us,

because many of us need your encouragements to move forward. Luckily, so far it haven't happened yet, I still can see smiles on your face, and hear jokes in the meetings. I do learn a lot from you both in scientific field and normal life, and I hope for more fruitful collaborations in the future.

I would like to thank my co-promoter **Prof. Tad Holak** from Poland, we haven't meet here in Groningen, but thanks for all your kind help to make my PhD complete.

I'm most grateful to the members of my reading committee, **Prof. Wim Quax**, **Prof. Frank Dekker**, **Prof. Roland Pieters** and **Prof. Michael Sattler**. Thank you for the time and effort you put in reading and assessing my thesis, as well as the useful comments.

Next, I want to thank my first paranymph **Fernando**, we entered the lab on the same day and became very good friends since then. I feel so lucky to have you beside in the following days during my PhD. As you mentioned in your acknowledgements, I felt so lost when I moved to biology from chemistry in the beginning. It's your encouragement and strong background in biology that help me continue in this major. You're a very experienced and excellent teacher, I hope one day the professor title will be attached on your name if you choose academic. I would also like to thank my second paranymph **Fabiola**, I cannot remember the first day we met, suddenly you appeared with smile like the sunlight shined into our office. Thanks for healing us many times with your smile and humour while we get stuck in our projects. It's my luck to meet you here and be very good friends with you. I just hope you can always keep this optimistic and enjoy your journey of your PhD and life in Groningen.

Many thanks to all the members in structure biology: **Afsaneh**, **Wenjia**, **Chao**, **Rick**, **Juliana**, **Ran**, **Xiaochen** and **Zayana**. I'm so lucky to have you all in this big family, and I enjoy all the four springs and five winters we spend together here, I wish you all success in the future. I want to express my special thanks to dear **Wenjia**, you're always ready to help us, and willing to share your knowledge of biology and crystallography with us. The way to a PhD is not always flat, but you're the most strong and independent candidate I've ever met. I miss the critical discussions with you when we meet problems in project, also I miss the hot pot and nice food you prepared in the weekends. You are a talent and hard-working girl, you deserve the rewards from both academic and life. Also, I would like to thank **Rick**, you're different from most of the native people I meet in the Netherlands, especially in cooking. I've tried various type of food at your home, including Brazilian, Mexican, Italian, French, Thai, Chinese and so on, I have no clues about other national food, but I would say the Chinese dumplings you made are better than mine, which makes me kind of jealous. Also, you're a smart guy, you

learn everything fast and are willing to share your knowledge in computer science with us. It's good to see you find a permanent position in the lab, then I can easily find you and make another BBQ in the Northern Park one day when I am back. Afsaneh, thanks for helping me continue the p53 project when I'm away, you also jump into crystallography with a different background, but I can see you making progress day by day, wish you a warm postdoc journey in Drug Design. Juliana, I would appreciate you inviting me to your family party many times, I like the food very much, especially the rice you prepared, also thanks for helping me with the docking problems I had. Chao, thanks for helping me leave the office during the weekends many times, it's a good time to visit the city center and meet more people instead of playing with *E.coli* in 3211. You're a brilliant guy, and it's good to see your ATC project reach a new level. Now it's your turn to grab the baton and help new Chinese fellows when they enter our lab, I'm pretty sure you can do it very well. Ran, you come to the lab with optimism and fashion, and make the lab younger. It's good to see you have your own ideas to design the projects, keep moving. Xiaochen, thank you for assisting me with crystals fishing in the last few months when I'm in Groningen, as well as the documents work for annual reports. We both have chemistry background and do crystallography here, do not be panic, you can do it finally, it's a matter of time. Zayana, thanks for sharing many Arabian food and tea with us, it's a good way to know culture from different countries. You're so brave to seek PhD even working in the university as a teacher for many years, at the same time taking care of two kids near our labs. Not many people have this kind of courage to pursue their dreams, and I am looking forward to see your promotion later.

I also would like to give my gratitude to all the former colleagues in Structure Biology: Eswar, Niels, Alaa, Sergey, Yuanze, Ameena, Marleen, Soraya and Zhara. We share the same working area for one to four years, and it will be a precious memory in my life. Eswar, we have a very long collaboration, thanks for helping me with experiments and leading us to DESY and Grenoble for the beamline trips, you work so hard and you deserve more good publications, I hope you are doing well and safe in US now. Niels, I feel like we are already old friends now, these mainly thanks for your jokes, pranks, and beers, as well as the solid help in crystallography tutorials. You do change our lab a lot, like the ordering system, lab management, coffee break, and Friday beer. In addition, your 10 years' experience in crystallography almost can solve all the problems we have in data and model optimizations. I do enjoy the time we worked together, thank you and Kirsten, I miss you two. Special thanks to dear Alaa, I think to me or Fernando, you're the "big sister" to us, we are both kind of lost

in the beginning when stepping on this land, thanks for calming down us in the first year. Your suggestions help me get used to the rhythm of the work here, and so as the life. You are stronger than I expected, that's why we prefer to ask you for a solution. I hope you are all the best with your family in Spain. Yuanze, you made a very good example for us, as the first guy who do both biology and chemistry, you strengthened me the idea to continue biology here, also thanks so much for the help in projects. Sergey, you're a very skilled researcher in the lab, now it's good to see you becoming a CTO in company, thank you for maintaining the labware for us. Ameena, you always have energy and passion to fight against difficulties in projects, or unfair in life, thanks for encouraging me to fight for my PhD here. Also, thanks for treating us lots of nice food and drinks, we wish you a bright future in your new company. Marleen, thanks for bringing us so much happiness in the lab, as a good organizer, you make the lab more active, we miss you so much when you back to Brazil. Also, for Soraya, you came here with the sunshine from South America, and changed our lab dramatically with your rich lab experience, we miss your optimism and smiles.

I would like to say thanks to every colleague in chemistry lab of Drug Design group, the current members and also those who have finished their journeys from our group. Special thanks to **Shabnam**, we have a very good collaboration in Echo project, and this has turned into one chapter here in this thesis, thanks for all your efforts to make this completed. It's a fantastic experience to work with you, I wish you have more publications and more success in academic. In addition, I want express my appreciation to all the Chinese colleagues in chemistry lab, **Qian**, **Jingyao**, **Li**, **Ruixue**, **Zefeng**, **Bidong**, **Xin**, **Qiang** and **Xiaofang**, I'm so glad to meet you all here, we make it as a big family in Groningen and soft the homesick far away from China. This is the strongest energy that drives me moving forward in these years, thanks for your support, I will miss the food you all made and the nights we spent in Werewolf game. I wish you to have more nice publications in Drug Design, enjoy your PhD period here and also see more beautiful views in Europe. We'll meet again in China later. Moreover, many thanks to **Patil**, **Roberto**, **Fandi**, **Markella**, **Angel**, **Mojgan**, **Santosh**, it's my pleasure to meet you here.

I would like to thank our secretary dear **Jolanda**, for constantly helping us with all the registrations, administrations, and financial applications work year by year, you can solve all the issues we've met while we got lost in the webs or offices from different departments. **Andre** and **Robin**, as the technicians of Drug Design, thanks for the practical help during my PhD. And one person I would express my special thanks, **Raymond**, you are a very enthusiastic and friendly person, thanks for the introduction of Dutch culture when we arrived in Groningen,

and also the laughs you bring to our office. **Paulo**, you're a quite soft friend with a very strong heart, thanks for your direct and indirect helps within this journey, I'll remember the days we have parties and BBQ together. Wish you all the best in the new journey.

I have met many Chinse friends here in Groningen during last 4 years, they come here for business, work, travel, while most of them purse their PhD, master or bachelor degree in the Netherland. I won't mention all the names in case I miss any important person from one of you. Specially, I would like to say thank you to all my friends who work in Zernike and UMCG campus, I receive many helps from different disciplines during my PhD study and this help me overcome obstacles quickly. The help from our community sometimes makes my colleagues jealous, but I'm so proud to have you all in the back. I wish you all have a bright future.

In the end, let me give my greatest gratitude to my family in China. Dear mom and dad, the way to a PhD is far and long, I am lucky to have the best parents in the world, thank you for the unreserved love and support. Dear sister **Fang**, I'm so happy to see you step into marriage with **Zhoulin**, now I get a cute nephew last year, I wish your new family all the best.

Kai Gao August 2020 Shenzhen, China