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Advanced bioactivity screening analytics for rapid identification of environmental toxicants

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2018

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citation for published version (APA)

Jonker, L. W. (2018). *Advanced bioactivity screening analytics for rapid identification of environmental toxicants*. [PhD-Thesis - Research and graduation internal, Vrije Universiteit Amsterdam].

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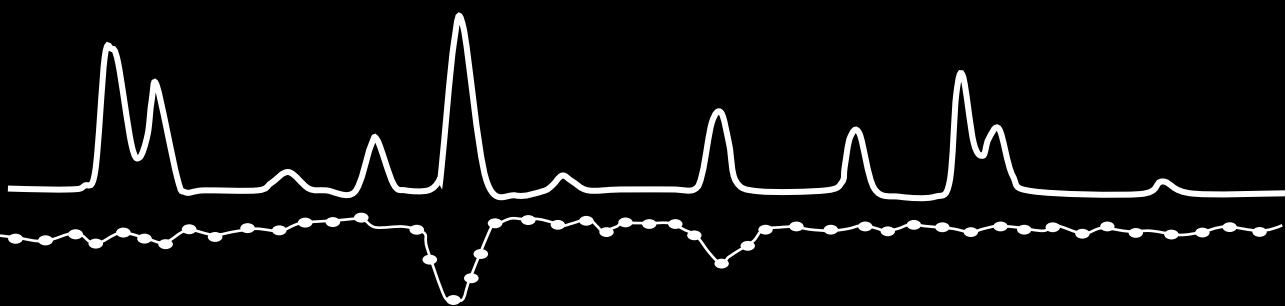
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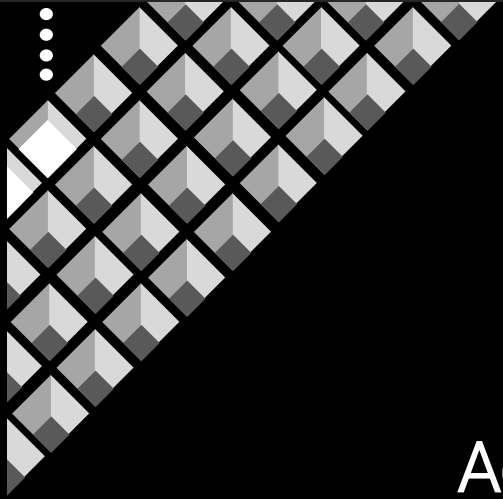
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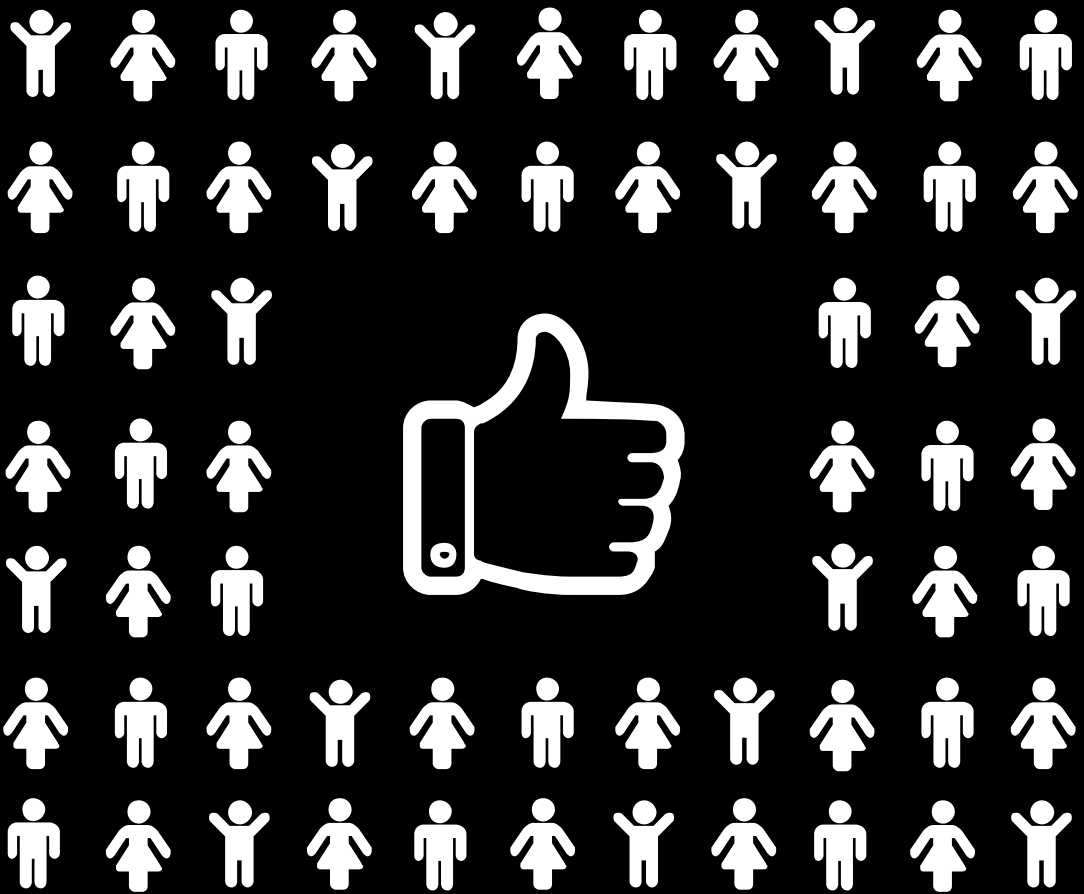
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Acknowledgements

/ Dankwoord



Of course this thesis cannot be finished without acknowledging all the people who I met during this 4 year adventure. It has been a pleasure to have met so many people from different backgrounds and cultures and without your help this thesis would not exist.

The PhD adventure actually started with Wilfried who, together with Jeroen, selected me as the suitable candidate for the job. I would like to thank you for having faith in me and I hope, that when you look through the thesis, you are happy with the outcome.

That Govert was going to be my promotor was not clear at the time since two new department heads would soon arrive to the VU whose identity was still "secret". Govert, we started approximately at the same time at the VU and I have experienced working with you as a fun and fruitful period where I learned about the scientific but also other aspects important for a PhD and after. You have proven to have eye for detail, (slightly less would have been fine for me too;)) and I would like to thank you for your feedback, comments and suggestions.

I would like to thank Jeroen, my co-promotor and direct supervisor for his supervision and the things I learned from you. I have experienced you as an enthusiastic, energetic and pragmatic person with a "we'll make it work" mentality and we did make it work! You involved me in collaborations with industry and gave me a lot of freedom and responsibility to manage and supervise students and substantial parts of the project independently. Moreover, thanks to you N-343 was a green environment looking a bit like a tropical forest. Also a big thank you to Maarten, Cari and Manfred for their feedback during the Friday morning meetings.

Besides advice on chromatography I would like to thank Henk for his sense of humor and tolerance against the many jokes. Whether it was an office wrapped in aluminum foil, a doorbell hidden behind the ceiling, cress plants growing out of your keyboard or an auto correction in Word changing the word "de" in "my name is Henk" it always resulted in a funny reaction. Typically this included some theatrical "suffering" after which a smile rapidly appeared. Of course I had partners in crime but they were smarter than me since I was always held responsible, even in the rare cases I did not have anything to do with it. For the people interested, I'm still looking for a successor.....

Linda, when I started there was only a week or two to go for you. I inherited your working place and it worked very well! Feng shui? Opposite of the desk David was busy finishing his thesis and who better to ask about the do's and don'ts when it comes to doing a PhD than a senior PhD student?! Thank you for the advice. DP, we both come from the pearl on the North Sea with its turquoise water, white beaches and spring/summer like microclimate (Katwijk). Thank you for asking me to be your paranymp and to introduce me to the prank Henk activities. Reka, the silent force of the department, thank you for being the key supplier of some sweets. I would also like to thank the glycomogists Viktoria and Kathrin, thanks to you I picked up a little of the GlucNac, GalNac language. Marija, thank you for being the energetic person in the room, your presence could not go unnoticed. Amir, Dina, and Barbara, we made it back from Châtenay-Malabry, an achievement worth to be mentioned! Rabah, thank you for being a climbing buddy. For an honest opinion, go to Petra! If it's good it's good and if it's shit you won't be spared but at least you know where you stand, I like the clarity! Jordy, people tend to say I can talk (no idea where that comes from...) but you are not doing a bad job neither! Thank you for always giving a more elaborate answer than expected. Dennis, we already know each other since the bachelor and especially that one practical course organic chemistry is memorable. We "missed" the scale down instructions which resulted in plenty of green/yellow like foam. Also thank you for regularly highlighting the "generation difference" and calling me "snotneus" when you were the victim of a stupid joke...I still carry the scars. By the way, I'm still waiting for the Bravilor Ferrari of the coffee machines. Sometimes, when returning from the Friday morning meeting, Jan-Heijn could be found in N-343 using the speakers to their full capacity (slightly exaggerated) for his music. Thank you for sharing the work vitamin and also thoughtful of you to put a Snicker in the pocket of my "penguin suit" for DP his defense in case of a sugar crisis. Rob, CASAnova and right hand of Don Somsen but to me known for his tiramisu, simply intergalactic! To the Italians who made tiramisu during their VU quest, yours were phenomenal too (having that said I don't expect a horse head any day soon). I suspect Andrea to have watched Bruce Lee kind of movies "be like water my friend". You certainly look like you're going with the flow! Teemu I would like to thank for his humor with a sarcastic edge, always hilarious! Kenia, Mehmet, Janaki, Angie, Valeria and Kristina, thank you for the easy conversations/laughs and Ewoud I would like to thank for giving me an idea about life within the pharmaceutical industry. Laura, thank you for telling me to "stay safe" before I went on a holiday. I'm still around so I did listen! Oier, we both know the pumpkin carving challenge was compromised since our competitors Elena and Rob (most likely) instructed their dozen students to choose wisely when grading the carving skills.... estudiantes, que gallinas! Elena, thank you for being patient when I once and again tried to speak Spanish and for the flexible usage of the focus office on the eight floor. What started as "I need the office to

focus on the preparation of two presentations" (two months in advance) did not really end I guess. Jokes aside, I would like to thank you for the easy laughs, support during the last bits of the thesis and of course for being my paranymph to help bringing this final day to a success!

Ben, thank you for your help with the mass spectrometers and for arranging all the other things in the department which may easily go unnoticed but are key to the functioning of the lab. For new department members, Ben can occasionally be difficult to trace. The way to go is to find a central point with a high probability for Ben to pass and wait patiently (imagine you are on the Savannah to spot rare wildlife). Good luck and don't blink your eyes, Ben moves fast!

I would like to thank the students who worked with me but also those supervised by my colleagues and the VU bachelors who spend some time in the lab for their final projects. Your presence brings a special lively atmosphere to the department which I appreciated very much. A step inside the student office (follow the sound) often meant having some easy laughs. A special thanks to Bas who I will remember for his resilient pipetting and peak integration efforts. Your work completed the data necessary for the manuscript and were a starting point for follow up studies. Also Susannah I would like to thank for her contributions. Julien, although you weren't my student, after we consumed half of Rob his intergalactic Tiramisu (no, it was not only me..) and a decent piece of Jan-Heijn his Arretjes cake (read: a block of molten chocolate recondensed with some biscuits inside) during the Christmas borrel, we are partners in crime when there is an occasion to pick some dessert. Jan, maybe it was because of the stroopwafels but you went like a rocket. You worked on every aspect of the GC-MS-Fractionation platform including the cell culturing and I would like to thank you for the nice and fun collaboration. From what I understood you may also have been responsible for increasing the all you can eat sushi price at Leidse plein. Thanks for that...but at least you returned home well fed!

And then we have Koen. You had a challenging project in which we found ourselves plenty of times doing some trouble shooting but you always stayed enthusiastic. I think we both appreciated the visits to the mechanical and electronic workshop and you have proven to share my enthusiasm for an occasional prank (thank you for your collaboration in turning a particular office into an aquarium). Of course I would also like to thank you for being my paranymph, very relieving that I can forward any question regarding the LC fraction collector to you so be prepared. Approaching the end of the VU adventure Robin was the man to fractionate volatiles for NMR. You managed to make the GC collector work with only little instructions so great job and all of that with a good sence of humor and enthusiasm!

Als er een andere plek binnen de VU was waar ik graag kwam dan waren het wel de mechanische en elektronische werkplaats. Graag wil ik in het bijzonder Dick en Niels bedanken voor hun belangrijke bijdrage aan dit proefschrift. Bij jullie kon ik altijd terecht met een technische en/of elektronische uitdaging. Ondanks alle drukte vonden jullie vaak tijd om de kleinere dingen, waar mogelijk, even tussendoor aan te pakken zodat we snel weer verder konden in het lab. Verder is het natuurlijk een coole omgeving om wat tijd in door te brengen en heb ik zowaar wat avondjes het boek elektronica voor dummies gelezen. Die Arduino heb ik inmiddels. Verder zie ik een lesje in het bedienen van een draaibank nog altijd wel zitten Dick (hint...). Ook aan de opperhoofden van jullie afdelingen Joost en Rob, bedankt!

To our neighbors the organic chemists, also your presence could not go unnoticed and regularly I could enjoy your communication in the form of some primal screams;). What those fumes can do to you....

I definitely should not forget to thank Bart and Floor, for the easy collaboration when it comes to the practical courses and helping out when I needed to borrow something. Giselle en Miep wil ik graag bedanken voor het voorzien van de nodige labjournaals, labels en markers. Zonder al die labeltjes zou ik me regelmatig op het hoofd hebben moeten krabben wat betreft de inhoud van de sample vials.

A little further away from the department but where I spend plenty of time cell culturing there was the Institute for Environmental Studies. The "ouwe van Velzen" I would like to thank for the jokes and GC support. One question..., what was that about that confetti coming out of you umbrella at station Hoorn? Peter, Jorke, Gerda and Philip I would like to thank for being willing to occasionally take over the cell culturing. When *Kiss* was on the radio and the volume suddenly went up you know SMF Cees is around, I suppose they are already used to this at BDS. Rianne and Jacco I also should not forget to thank for helping me when I was looking for something and uhh Jacco, how is the bowling going ? Also Xiyu, Sara and Luisa I would like to thank for the times we had lunch together and not to forget the IVM visitors Maria, Tim, Cornelius, Alin, and Chiara. Also Ana, thanks for the bouldering tips and Alvaro for visiting with your whole family. Nick, the cell doctor, I would like to thank you for being the PhD brother in arms during the STW project. I have seen a lot of well plates during the PhD but you probably must dream of them! Marja and Timo, I would like to thank you for taking care of the "IVM side" of the project. I think looking back it was a successful couple of years but I rather leave the judgement to the end users.

Marja, the drive to Aqualab Zuid with some Mars, Twix and Snickers was interesting/memorable, for a short moment we went in a direction to see some cows from up close but well, that's probably what happens when lost in conversation. It's a pity we didn't have other locations to travel jointly to.

Of course I would also like to thank the end users Vitens, Waterlab Noord, Spark Holland, het Waterlaboratorium, Waternet and Aqualab Zuid of the STW project for their contributions and constructive comments during the biannual meetings. Several meetings were organized in your lab and it was very nice to have the opportunity to take a look in "the kitchen".

For the construction of a new fraction collector in collaboration with Spark Holland I would like to give a special thanks to Johannes and Bert for their input and contributions. Together with the VU workshops we were close to a beta-version and I am happy that the work continued to make it commercially available. Great!

Part of the project included a period for implementation of the LC fractionation platform at HWL. In addition to the academic environment this was a nice opportunity to see "life" in industry. The first couple of lunches I had to get used to though since there were those occasional silences that could last quite a bit and as you may have experienced this can sometimes be difficult for me. Things changed a little after an occasional joke here and there and for the people that enjoy some silence during lunch...sorry! I would like to thank all the "HWL'ers" for a fun period and a special thanks to Rob for being so easy going and ensuring everything is always available. Also a big thank you to my office buddies Carla and Karin, we laughed quite a bit. Cees, thank you for appreciating the occasional pranks. Corine, thank you for making the HWL episode of the thesis possible and for the scientific feedback! By the way, that little tap at Horstermeer was nowhere to be seen. Luckily Muriel the RWZI mermaid who anyways already radiates light in the dark was present to assist with a soup spoon (sorry, kon het niet laten...)

What started as a side project turned out to be very successful. I would like to thank Jaap, Stan, Sjaak, Paul and Ben from Da Vinci Laboratory Solutions for the easy collaboration. How awesome that the GC fractionation platform is available on the market! Jaap, you arrange dinner when 50 are sold;)?

Strandpaviljoen Zee & Zon en de werknemers uiteraard wil ik graag bedanken voor het zijn van een perfecte omgeving om het laatste stuk van mijn proefschrift in af te ronden. Regelmatig heb ik een ochtend bij jullie zitten typen. Op een gegeven moment hoefde ik alleen maar te gaan zitten en kwam, zonder een bestelling te doen, de juiste koffie er al aan. De sfeer, de koffie, het uitzicht en een

babbeltje bezorgden me wellicht net even dat extra stukje inspiratie om de laatste loodjes af te ronden. Bedankt!

Me gustaría agradecer a Ana todo su apoyo durante estos últimos años. Agradezco el tiempo que hemos pasado juntos y las aventuras que hemos compartido. Estoy seguro que vas a desarrollar todas tus habilidades y que te vas a convertir en una gran profesora. Os deseo lo mejor a ti y a toda tu familia.

My colleagues from Janssen Biologics I would like to thank for the warm welcome and for being so helpful and patient with all those question one typically has when starting a new job. Thanks to you I soon started to feel home at my new working place and feeling good at work definitely helped me in finalizing those final little bits of the thesis in the evenings and weekends. I'm looking forward to continue to work together on upcoming challenges.

Uiteraard wil ik ook vrienden en familie bedanken voor hun support, het geduldig aanhoren van die "interessante" misschien niet altijd even makkelijk te volgen verhalen maar ook voor het herinneren dat er nog meer is buiten de PhD bubble.

Mijn lieve ouders, zonder jullie was ik er niet eens geweest en dan begint het natuurlijk pas. Jullie hebben de basis gelegd voor wie ik ben en waar ik nu gekomen ben. Het waren soms turbulente tijden waarin het maar al te duidelijk werd dat gezondheid één van de kostbaarste dingen is maar ondanks alles heb ik altijd veel liefde van jullie mogen ontvangen en ben ik nooit iets te kort gekomen. Dankjulliewel voor jullie onvoorwaardelijke steun ook al was het soms misschien een beetje onduidelijk was waar ik me bezig was, jullie nuchtere kijk en aanmoediging.