

Cancer,  
Stem cells &  
Developmental  
Biology

*Newsletter September 2017*

# Introduction

Dear new students, with this news letter you can already look forward to the activities and seminars the new StuCom will organize for you by reading about the lecture by Jeroen van Zon and the BBQ to celebrate the end of the academic year.

Dear second and third year students, congratulation with surviving the first year or the second internship! With the many pictures in this newsletter we would like to take you back to the awesome time we spent in Bonn and Cologne on the retreat.

Our year as StuCom has come to an end and soon a new StuCom will take over. We really enjoyed this year of organizing seminars, activities and especially the retreat. Thank you all for your enthusiastic participation! We are looking forward to meeting the new StuCom and hope to see you all at the first event organized by our brand new StuCom.

StuCom 2016 - 2017

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# Seminar

## Jeroen van Zon

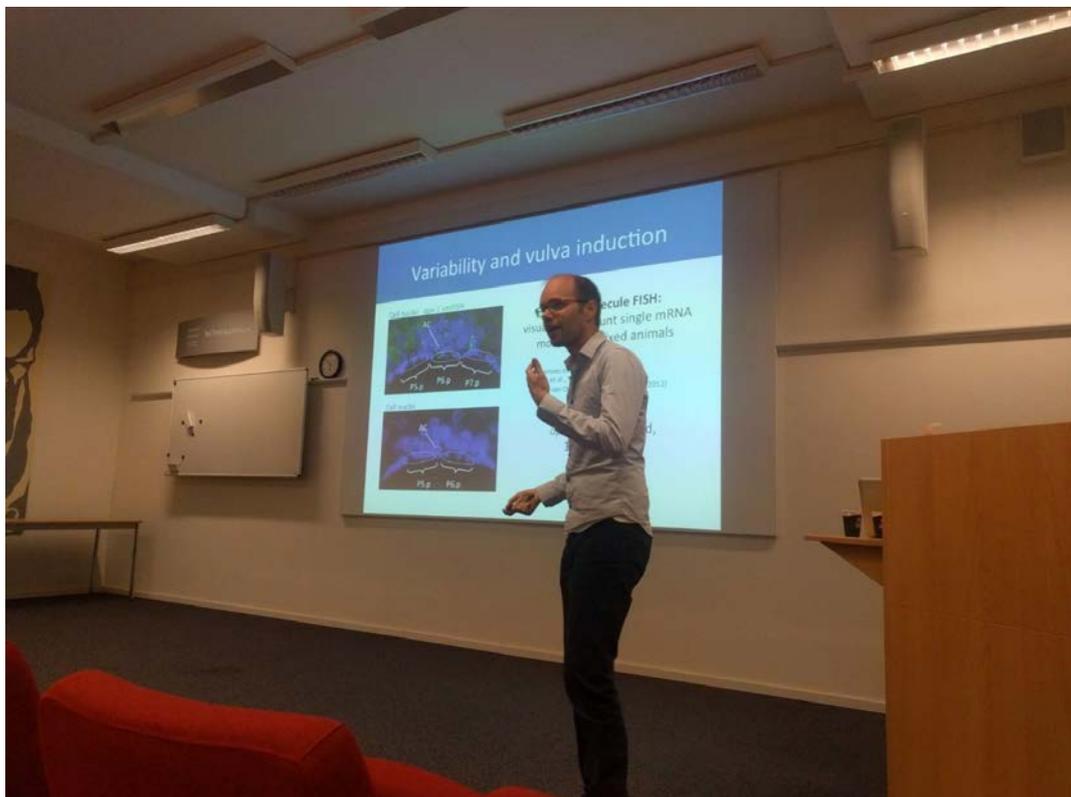
Although Jeroen van Zon initially studied physics, it was soon during his PhD that he turned to biology. As a postdoc he studied the role of molecular noise and variability in patterning during development. Now, as a group leader in AMOLF, he employs his biophysics background to quantitatively research the role of stochastic processes in embryonic development.

Many fundamental processes in biology are highly stochastic, however development is robust and its phenotypic outcome is consistent in spite of such variability. To study how this is achieved, Jeroen's group employs vulva development in the nematode *C. elegans* as a research model. Vulva induction in *C. elegans* is controlled by the anchor cell, which releases an EGF homologue (*lin-3*) to create a graded induction of Ras signalling and Notch ligand expression in the vulva precursor cells that lie beneath. Lateral Notch signalling in the latter inhibits Ras signalling in the neighbouring cells so that only one particular vulva precursor cell is induced. Strikingly, they have observed that in early development the relative location of anchor and precursor cells is highly variable, even if most animals end up with a normal vulva configuration.

Jeroen's group visualized fate marker mRNAs via single molecule FISH in the vulva, showing that the cells right under the anchor cell express said mRNAs even when the correct vulva precursor cell is misplaced. This precursor then moves towards the anchor cell to overcome the initial misplacement as development continues, possibly due to a feedback loop in which, as it gets closer to the anchor, it receives more *lin-3* signalling and therefore inhibits more the neighbouring cells to ensure its fate. Van Zon's group has modelled precursor cell migration with animals without Notch signalling, where *lin-3* levels indeed determines which cell becomes the vulva. Therefore, it seems that Notch signalling helps correct precursor cell misplacement in the few cases where the induction signal deviates from the normal situation.

Given the complexity of this back-up system to overcome genetic expression variability, the question of why would biological processes need stochastic “noise” sources arises. To tackle this question van Zon’s group employs another *C. elegans* process as a model: the anchor cell/ventral uterus decision in which two different cells, initially identical, engage into different fates. The working model states that the stochastic fluctuations in Notch ligand and receptors in this system are needed to ensure that there is always one cell of each kind.

To test the anchor cell/ventral uterus model, they recorded time-lapse movies of single worms expressing a fate-reporter tag through their development. Substantial variability has been observed on the mother cell division and the daughter cells differentiation time-points, which seem to correlate. However, when no significant difference between when both cells have appeared, fate decision relies on the different mRNA expression of Notch ligands as foreseen by the model. Disparity in Notch ligand amounts seems to be due to bursty genetic expression, which is not a common occurrence. Based on this, their hypothesis is that this bursts of gene expression are being actively promoted to enable the necessary plasticity for fast cell fate decisions. Further studies may explain how this source of variability is promoted; in addition van Zon also seeks to continue their research in other biological systems such as human organoids.



# Retreat

## Day 1

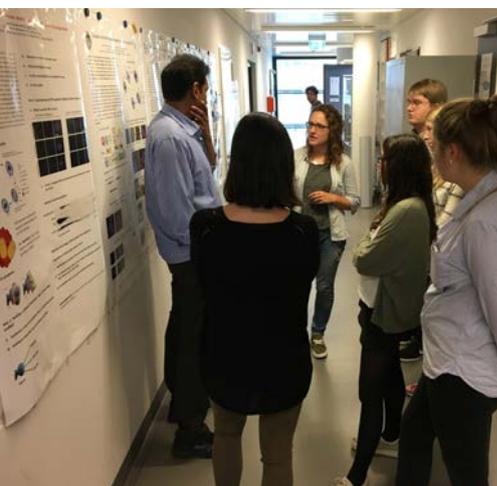
The CSDB (yes, that's our new official abbreviation) retreat started in front of the Hubrecht institute early Wednesday morning. After everyone got a coffee and was checked in by Rosan, we started our bus ride to Cologne.

First stop of the retreat was the CMMC (Center for Molecular Medicine Cologne) located at the Campus in Cologne where we were warm-hearted welcomed. The programme started with short pitches from the PIs about their research topic which was followed by very delicious lunch. The students were divided in smaller groups to visit the lab facilities and talk to 4 different group leaders to gain more insight into their research.

In the afternoon, we left the CMMC and made our way to the hostel in Bonn. After settling into our rooms, the BBQ was ready and we enjoyed our food in the sun. And not forget to mention our grill master couples Matthijs & Marek and Nik & Dennis who even forgot to eat while taking care of our meat!

Because we emptied all the beer in the hostel, the decision was made to take the bus towards the city centre of Bonn. We enjoyed some more local beers in the Bönnsch Café and some of us had a good night dancing in the N8schicht club!











# Retreat

## Day 2

On Thursday morning everyone pulled themselves out of their beds after approximately 3 hours of sleep. We were expected at the Max Planck Institute for Biology of Ageing at 10 o'clock, so at 9 everyone was sitting in the bus to travel from Bonn to Cologne. At the Ageing Institute, we were welcomed by Dr. Ralf Petri. After a few interesting talks, a self-organized coffee-break and an advertisement talk about PhD positions in the institute we left the institute around 1.

The plan was to spend some free time in Bonn, so with the bus we went from the institute to Bonn. In Bonn we came across some traffic jam, big bus versus small streets. But our bus driver found a creative solution to avoid this: something with moving some of the traffic fences. In Bonn the group split up and went on a discovery tour through to Bonn. We came by the University of Bonn, walked along the Rijn while others spent the afternoon at a café eating and drinking.

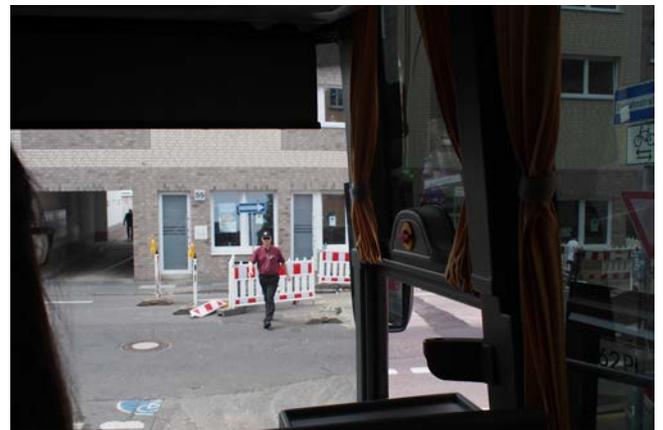
Around 5 we went back to the Hostel where at 6 o'clock the student presentations began. Daan, Joep and Sjoerd were the lucky ones giving us a 20 minute presentation about their research projects. We all enjoyed their presentations and we would again really like to thank Daan, Joep and Sjoerd for their efforts to present during the retreat!

In between the oral presentations we had a lovely dinner hosted by the hostel and around 8 all the students had to become active for the poster presentations. The main event of the retreat! In 30 minutes, students were able to present their research projects. Although the time was a little short, I think everybody enjoyed presenting their work and hearing from their fellow students about their projects.

Around 10 o'clock the regular day program had ended and the optional night-program started. A big group of students went with the bus to the city centre of Bonn to end the day with some beers. The night ended with almost everybody dancing in the Club N8schicht, a local discotheque where our group completely filled the dance floor. At 6 A.M. the last students went home to the Hostel, where they had a few hours of sleep before the last day of the retreat started.

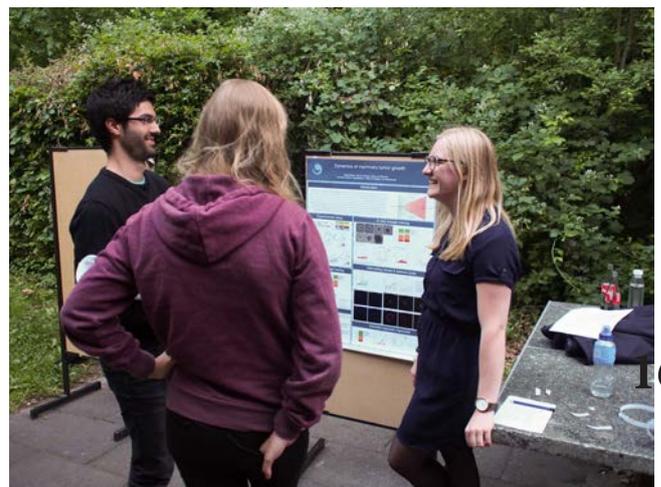
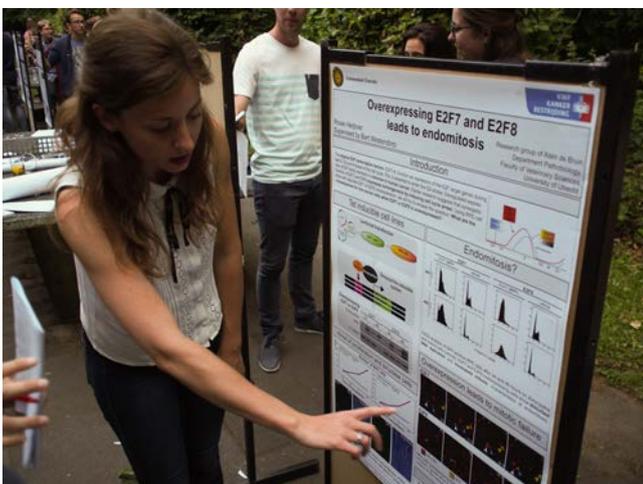


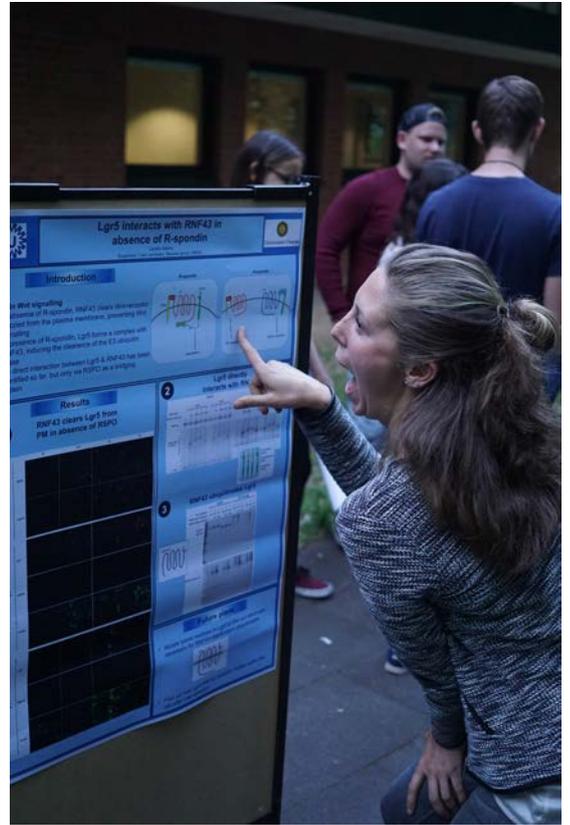


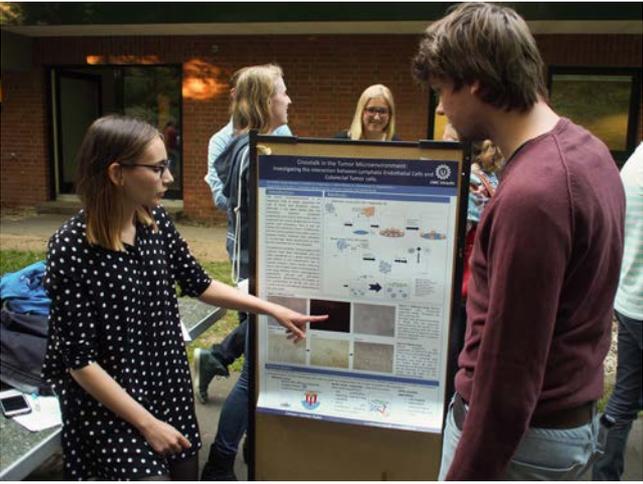












# Retreat

## Day 3

The last day of the retreat arrived! On Friday, it was time for some touristic activities. Everyone was able to sign up for one of the activities in advance and after arrival in Cologne, the group separated. The first group departed to the Kölner Dom to have a nice guided tour whilst the other group made their way to the Chocolate Museum.

The Kölner Domm tour started at the other side of a rainy Dom square. As soon as all audio guides were tuned to the frequency our guide, we made our way to the Dom. The inside of the Kölner Dom is as impressive as the outside. The tour included stories about the architecture, history, and purpose of the Dom. Our tour guide, who unsurprisingly had always been a teacher, clearly knew more about the Dom than the standard information which can be found online or in brochures. This allowed her to give a personal touch to the tour by including historic details based on the nationalities within our group. Even though our tour was obviously fascinating, some of the scientific minds in our group couldn't resist experimenting with the frequency of their audio guide. As it turned out, we were able to tune to our favorite guide in the Dom: multiple tours for the price of one!

The tour in the chocolate museum was a very nice, hands-on experience. In 90 minutes, we made our way through the origin of cocoa bean harvesting to the great-scale manufacturing of chocolate. It was very educational and delicious, as there were a lot of opportunities to taste the different bits and pieces of chocolate. Starting with a raw cocoa bean (which many of us didn't really like) to the raw cocoa mass, original ungrounded milk chocolate and eventually a variety of different high-quality chocolates. The tour was most certainly a piece of heaven on earth for the biggest choc-aholics amongst our students.

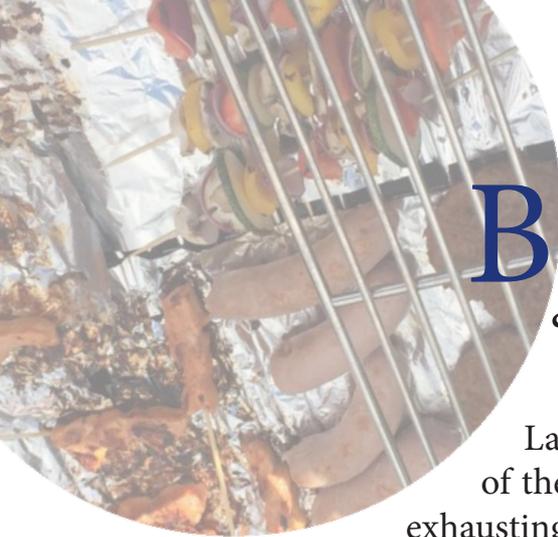
After both tours, we had a lot of free time to explore the city of Cologne. Some went shopping, others strolled around the city and went to see the highlights of Cologne and others set themselves on a terrace as soon as the rain stopped pouring. After a couple of hours, everybody arrived at the restaurant and we were treated with a typical German meal.

All in all we can state that we had a very nice retreat with a lot of variety in activities. There was plenty of time for education as well as for leisure. We hope you enjoyed the retreat as much as we enjoyed organizing it!









# BBQ Event

## “Steaking” together

Last month we all came together for the last StuCom event of the year, a BBQ, hoping to provide a nice break from your exhausting internship or hellish final reports. With a scary weather forecast, the StuCom held their breath praying for the best. After the gloomy rain, the sunshine conquered the sky in the afternoon and students started gathering for some deliciously grilled meat (except the sausages, those were horrible) and chilled beers.

Since many of us had not seen one another since the retreat, the event soon started to get louder as students were catching up. The barbecue was a great place to vent all our lab frustration and brag about all the eureka moments. While stomachs were filling up, the sun started to go down. With alcohol blood percentages rising, intellectual discussions raged on until the late hours. After the cleaning a small afterparty was held in the city center.

We would like to thank everyone for making the event a great success! We hope that you all had a great time during our social events this year and we wish to see all of you again in the ones to come. Have a nice summer break and let's have a moment of silence for our brothers and sisters stuck at their internship or writing their final reports over the holidays. Cheers from the (soon to be replaced) StuCom.



# New Stucom!

Do you enjoy bringing people together? Would you like to get valuable experience on how to plan events? And most importantly, do you want to be part of a fantastic group of people?

Take the chance to be part of the Master's Student Committee!

Whether purely academical or more fun-oriented, StuCom organizes several events for all the Master students to enjoy. Being part of it will enable you to get creative as to what we can do next year. If you are into media and communication there is a spot for you as well. We are always looking for new content for our newsletter and facebook page, and if you enroll in the committee you can help in editing and in maintaining our social media. It is also a great experience to bond with other Master students which you would not see so often otherwise and what's more, you will promote others doing so as well either during events or the annual retreat.

Sounds tempting? You can apply by sending us an email [stucomcsd@gmail.com](mailto:stucomcsd@gmail.com)

“I don't know where I would be without StuCom guiding me through the long night”

-Marek van Oostrom - Logistic Manager

“The StuCom fucking rules”

-Angela Sedeño Cacciatore - Internal Factors Facilitator

“Sometimes, working in the lab is very tough, but then I remember there is also a StuCom seminar at 17.30-19.00”

-Femke Groeneveld - Content Manager / Brand Ambassador

“I wish the StuCom meetings would take longer, they are always loads of fun”

-Rosan Heijboer - Communications Expert

“The StuCom will always be there for you”

-Elisha Verhaar - Chairwoman / Central Program Coordinator

“Feeling Sad after a failed experiment? The StuCom won't let you down”

-Lotte van den Bent - Corporate Financial Officer

“I thought studying would suck, but then StuCom came into my life”

-Madita Reimer - Central Web Consultant



# Colophon

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