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Oral History: Joan Steitz / 2018/11/15

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Key

AFL: = Interviewer, Anne-Flore Laloë

JS: = Participant, Joan Steitz

[??? at XX:XX] = inaudible word or section at this time

AFL: So we're here today, it's the 15th November 2018, and this interview is part of the oral histories programme of the EMBL archive. We are at EMBL Heidelberg in Germany. My name is Anne-Flore Laloë and I'm the archivist at the European Molecular Biology Laboratory. Now please would you introduce yourself?

JS: OK. I am Joan Steitz, I'm a professor at Yale and I'm very pleased to be here to be subjected to this interview!

AFL: <Chuckles> Thank you very much. So before we start talking about your relationship with EMBL, can you just introduce yourself in terms of your professional life, how you became a molecular biologist.

JS: Oh my goodness. How much do you want?

AFL: The general story.

JS: OK, well the general story is that I knew I was interested in science when I went to college, I went to an unusual college in the US that had a work-study programme called Antioch College in Yellow Springs, Ohio, a very good, at that time liberal arts college, and with the work-study programme that they had, I ended up in a job at MIT in Alex Rich's lab, and that was how I discovered molecular biology, which at that point was a very, very new field, as an undergraduate, and I got captivated and although there were many twists and turns in between then and now, that was my initial introduction to molecular biology.

AFL: What made you stay in the field? That was a field that was so new, what really hooked you?

JS: OK. So after being in Alex Rich's lab, I then spent a year in Europe, there I worked in Tübingen in the Max Planck Institute, in the laboratory of Alfred Gierer who has

since become a neurobiologist but at that time he was one of those new molecular biology people, and I also had a fabulous time working there and really got captivated by DNA, by RNA. DNA was very, very new and RNA was even newer! I worked on RNA phages and nonetheless I decided that I should go to medical school instead of trying to get a PhD in science, simply because there weren't any women role models, there weren't any professors or heads of labs when I looked around, and I visited labs both in the US and in Europe – in Germany I should say – but the summer before I was about to go off to medical school I worked in the lab of Joe Gall in Minneapolis, which is where I grew up, he happened to be there just before he moved to Yale, now the Carnegie Institute in Baltimore, and he gave me my own project for the first time and by August 1st I'd decided that I really wanted a PhD and I didn't care what my prospects were, I really wanted to pursue discovery in science, and I wedged my way sort of into the graduate programme at Harvard, which was where I would have gone to medical school, and then ended up … there's more saga here, I ended up in Jim Watson's lab, which was very, very, very exciting at that time, and the early steps in protein synthesis were being worked out. And that turned out to be a successful endeavour and then I went from there, with my husband, who I'd just married, who was an expert crystallographer, to the mecca of x-ray crystallography, Cambridge, England, but they're also not bad in molecular biology! And there I picked up a project that my male peers, the other postdocs, who were almost all American at that point, and they knew that they would have two years at that time to do a post-doctoral project, get some results and find a job back in the States, and there was a project that many people had considered that was rejected by all of them as too challenging to get any results in two years, but since I didn't think I was gonna be looking for a job, I was gonna be a research associate, I took on this project, and it worked out and then also it was the time of the women's revolution in the US and universities were starting to want women on their faculties, so that's how I ended up with a faculty job. <5:00>

AFL: Fantastic, so after two years in England, and then that's when you –

JS: Well three, it turned out that we were there for three years, yeah.

AFL: And that's when you went to Yale for the first time?

JS: Yes.

AFL: And you've been at Yale –

JS: Ever since.

AFL: Excellence. So to move on to the EMBL side of things, your role, if I understand, has been peripheral to EMBL, you've never worked here, but you've been involved with us in different ways.

JS: Yeah. So the first I heard about the whole EMBL concept was when we were postdocs at the Medical Research Council lab in Cambridge, England, because at that time John Kendrew was in the process, the lab was sort of his brainchild as I understand it and look back, and there was a lot of talk about who would go there, and how it would work and who would be there, and I mean Heidelberg was certainly a famous university … but both the biophysical EMBL right, the biophysics lab, to which several people who had been at the Cambridge MRC and the structural biology operation moved there, Ken Holmes was one of the people, and there was also I think … again I can't remember but it seems like setting up the more biological wing was a little bit later and there was certainly talk of who would be here and … but from the very beginning I knew that this was the lab.

AFL: There has from the very beginning been sites working with the synchrotrons in Hamburg and in Grenoble and there was always a question of collaboration, discussion of where the main laboratory would be and in collaboration with which host institutes.

JS: Yes, and I remember at that early stage, that was obviously controversial and a lot of people said, 'Why are you going to Germany?' etc. etc. But being an American observer I was more or less just listening and enjoying the pitter-patter that was going on, on these big decisions. And they were big decisions because this turned out to be certainly a very successful place for it to be, which isn't what everybody predicted to begin with.

AFL: Absolutely.

So that's how you started hearing about rumours of this laboratory happening.

JS: Yeah. When was the first building actually built on this site?

AFL: The laboratory that we're in today, that was inaugurated forty years ago in May '78, but the founding of EMBL as such was '74, and there was an interim period of about four years where staff were disseminated, there were some based at the DKFZ research centre in town, there were some based at the *Akademiestraße* in the old town. I mean there were a few huts scattered around in the woods, but the building construction, the laboratory opened really in '78. In between time and ever since.

JS: OK. That makes sense. And when did Philipson come?

AFL: You talked about …

JS: Lennart Philipson, was he the first?

AFL: No, he was the second, so John Kendrew was the first.

JS: John Kendrew was the first and … OK.

AFL: I believe Lennart Philipson arrived in 1982.

<Pause>

JS: OK, that all makes sense. Yeah. So I don't know how many times we visited Heidelberg, say during the seventies, I don't know, or the early eighties. I don't think that there were any specific meetings here. There was a meeting, a small meeting but it was organised by Lennart Philipson, so it must have been some time before I ended up on SAC. It was sometime between '82 and '88, when the snRNPs were new, and we had named all the proteins by their position on a gel and called them A, B, C, D, E, F, G. <10:00> And other groups had also fractionated them and given them different names. And Lennart decided that it would be good to have a meeting and have everybody decide on what the names should be for the future, and so there was great discussion at this meeting. I think I gave a talk here at the same time, but there was great discussion about whether we should name them after the molecular weights within them, but then the molecular weights were different in different organisms. And it finally came down to the decision, which I think was pretty much made by Lennart, that pleased me very much, to go with the nomenclature that we had given these proteins initially. But that was obviously very seminal in the whole snRNP field, and clearly it was something that I was very much involved in. And that's my first real recollection of actually being here and I'm not sure when that meeting was. I don't know whether you could look it up.

AFL: I should be able to look it up. That sounds like a very worthwhile meeting.

JS: It was a very worthwhile meeting. It was little other than just trying to sort out … I don't remember there being lots of speakers. I remember it being a small committee, I think Sue Berget was here and I've forgotten who else was actually here, but Lennart had clearly invited the important people!

AFL: So was it Philipson, Lennart, who invited you to join SAC?

JS: Yes, indeed, yeah.

AFL: So what was the role of SAC back then? How did it work?

JS: Well it was much more informal than any subsequent scientific advisory committee I've been on, I think, because those types of committees weren't fully developed, at least in this particular field, at that time. I remember we would always go either the night before or the first night, to their apartment, and Lennart's wife, Miriam I think was her name?

AFL: Malin.

JS: Malin? Yeah. Would have a wonderful buffet for us and we would have a lovely dinner and a lovely evening, and then we would talk to people in the lab including, there would be some presentations and also we would troop around and actually see the facilities, and then discuss what was going on. But the reports at that point were not long written things the way they are now, where you had to pre-prepare; somebody took notes and just jotted down a couple of sentences about each of the investigators that were being looked at. And so it was much easier and much less formal.

AFL: How many people were on the SAC?

JS: I can't even remember. It was four or five.

AFL: Oh right, so a very small committee.

JS: Oh yeah, it was quite a small committee and then one of the special privileges was that the SAC meeting was always coordinated with the council meeting, and then you would have the biggies coming in from the various … *the* molecular biologists from the various other countries and trying to negotiate financial things and organisational things, and that was where I loved to sit and watch Lennart orchestrate these meetings. And I think they almost always came out the way Lennart wanted them to come out, or at least that was my impression. But again, coming from a place that wasn't directly involved in how much money should this country give and how much money should that country give, I mean those things weren't actually discussed out in the open but those were clearly the sort of hidden agenda items in terms of should the mice be moved to Monterotondo, should the mice really be moved there or should they be moved there and what were the pros and cons of doing it and things like that.

AFL: So all the background stories were … in the background.

JS: Yeah, but I can't remember the details!

AFL: Right! So even Council back then, so EMBL would have had much fewer member states so the Council members would have been 10 or 12 countries represented, as opposed to now.

JS: That was about the size of that group and it was clearly a bigger group than SAC but still … I think Gideon Dreyfuss remembers being on SAC and he remembers my being on SAC at the same time. So <15:00> we didn't talk about who else was on SAC. Was that on the list that you actually –

AFL: No. I can look it up.

JS: OK, so I'd be amused to know who else was on SAC. I vaguely recall that it may have been a meeting, Paul Nurse was on SAC at one point and I think … and then there was, later there was … <sighs> it was much later … I mean many of the facilities were getting going in terms of the protein facility, the starting of some computational stuff, I don't know if there was a [??? at 15:44] at that time or not. But just starting, and there were questions about whether these were new technologies. Obviously they were really being done by scientists but there were questions about how were they going to fit in and did they really represent an expansion of the science personnel or were they technical personnel and questions like that. And they would remember being discussed.

AFL: So that's actually quite almost theoretical questions of shaping molecular biology at the –

Did you enjoy your time on SAC?

JS: Oh of course, of course! As I said, I relished watching Lennart do that! It was interesting scientific discussions with good people, who I wish I could remember who they all were!

AFL: Did you get to work with Fotis Kafatos at all?

JS: Oh yes!

AFL: So how was that, different or the same or not?

JS: Well I had first known Fotis when I was graduate student, because he was a couple of years ahead of me and he had actually been the TA for a lab course that I had taken, and … neither he nor I actually thought that lab courses were a very good way to get students interested in labs and to teach biology. And so I had known him from then and then he was also much, much later, he was head of also then, for many years, on the SAC for the Biocentrum in Helsinki, and Fotis was head of that for a while, and some other things.

AFL: So how was here compared- well not compared but how was it different to working, or was it different working with Fotis than under Lennart?

JS: Gosh. Of course it was different. They're just very, very different people but Fotis had many of the same political skills but they were … disguised in a different way, if I can say that. With Lennart it was the very smooth European gentleman; with Fotis it was rougher around the edges, but all the same really good organisational skills were there.

AFL: That's interesting.

Each Director General with EMBL has been such a different influence on the organisation. It's fascinating. But clearly you're still a molecular biologist, you're still at Yale, you're still involved with EMBL in different ways. What would you like to see the future of molecular biology – or first of EMBL and then of molecular biology more generally go? What are the big things you're excited about for the future?

JS: <Sighs> Well, there's so many. I mean I'm still fascinated by gene expression because that's the field that I'm in. I don't feel a need to move to neurobiology or biology or computational science or evolution or whatever. And I'm also very much in love with RNA which again, as I said, ever since I was an undergraduate, and I would just like to have more understood about how a cell actually functions with all these complicated molecules and how it sorts them out and how it uses them and yeah, each new discovery – you've heard about some of them even at this meeting that I wasn't aware of, because you can't cover everything, are very, very exciting.

Obviously it's gonna change, it's going to change very much and it has changed incredibly much during the time that I've been <20:00> in the field, and a lot of it's technological development, which has made things possible that weren't at all possible. So each step is a new adventure – new wonderful thing to think about, and I'm sure EMBL will keep up with that.

AFL: We'll try certainly! You touched at the beginning upon the field of being a woman coming up in science when there were few role models.

JS: EMBL has been pretty good actually about having women group leaders, Janni Nüsslein-Volhard, I don't know if she was the first.

AFL: I don't know off the top of my head.

JS: That would be interesting to look up. Now I think … I think she had already left by the time I was on SAC.

AFL: Yeah, I think she left at the beginning of the eighties. She and Eric both left.

JS: Yep. Janni some time earlier to Tübingen.

AFL: Yeah, she went to Tübingen and he went to Princeton within six months of each other.

I think EMBL has always, or often, had female group leaders.

JS: So that has been a priority of directors, and I think generally very balanced with respect to attitudes about women versus men, which has been a really good aspect of EMBL.

AFL: And now of course we're having an incoming Director General.

JS: Absolutely.

AFL: Which I think is very exciting.

JS: Now the other thing that I remember was pretty controversial at the beginning was the idea that EMBL would basically be an incubator for young people in science, and people should not expect to stay longer than five years or ten years at the most, and then go on to be someplace else. And again that model, which I think many people were very fearful of that model, because it was so different from the way most European labs work, and even fairly different from the way the US works, that once you've made it over that period then you're there and you don't have continuing reviews and things happening at later stages; and to see how well that's worked has really been a great pleasure and I think more places then have gone on to adopt that sort of model.

AFL: I think so.

JS: So I think in terms of really being an international melting pot for science, EMBL has set the standard and also with some of these organisational things that it decided it would do, it's quite round.

AFL: I think one side-effect of the nine-year rule is also it keeps the average age quite young compared to other similar institutions. And the nine-year rule also applies to all staff.

JS: Oh really? Oh, I didn't realise that.

AFL: Not just scientists.

JS: Oh.

AFL: So I think there is exceptions – there are positions in which it makes sense to have continuity and of course people like Iain Mattaj have been here much longer, but it applies to all staff.

JS: I didn't realise. Aha! That's very different from … <pause>

AFL: Many places!

JS: I don't know of any place else that has that sort of rule that you apply to staff, and to technical support, administrative support. Amazing. So what do people do? They just turn over?

AFL: Yeah, we just turn over. I think it … but we all know this when we arrive, so that changes the protective when you start, and in a way … for example in a post like mine, as the archivist, I know that I'm also writing notes for the next archivist, who will take over in six, seven years.

JS: But that's probably valuable and <25:00> … was that the case from the very start in EMBL?

AFL: It's been on and off, but it's always been really …

JS: I think probably that's something that was designed to sell well to the Council and support the international character of the place, because if you have embedded people that can become quite powerful, who never turn over and they would tend to be German-heavy just because of where this is, that would be seen as a disadvantage. That's interesting.

AFL: Absolutely. And I think one way that it has been explained to me in the past is if EMBL was an investment in science and its staff, trained staff after nine years is the product, and so sending us back to our home countries, almost, to perpetuate EMBL-ness as a kind of –

JS: Interesting!

AFL: I'll wrap up because I know you have to travel back, but just one question I just like asking to finish off is do you have a piece of advice for a young scientist starting out today in science, in molecular biology?

JS: Well I think my advice is fairly standard, that if you find something that truly turns you on and you truly enjoy doing, which in this case is science, then there are all sorts of different ways to do it and to make it work and to get joy out of that and don't let people discourage you by making innuendos or telling you to your face that maybe this isn't for you. I think you know what you want to do and you should just stick to it and do it, and it'll work.

AFL: That's great. Thank you so much for your time Joan. It's been a great conversation with you.

JS: Well – short!

AFL: Thank you very much.

JS: That's about all I remember!

<End of interview>

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