

Ron Hancock – a passionate scientist and a Great Man

Sergey V. Razin✉

Head of Molecular Biology Department at Lomonosov Moscow State University and Cellular Genomics Department at the Institute of Gene Biology of the Russian Academy of Sciences

https://doi.org/10.18388/pb.2021_540

✉correspondence: sergey.v.razin@gmail.com

Ronald Hancock (Phot. 1) started his scientific career with studies on prokaryotic systems. Although his studies in this area were quite productive [1-3], he soon became interested in eukaryotic cell nucleus and started studies of chromatin and DNA replication. From the beginning of his work in this new field Ron Hancock had made important observations that were published in top rating journals [4-8]. In the following years Ron Hancock contributed a lot to the studies of chromatin replication [9] and of high-orders chromatin packaging. In particular, his works disclosed the role of topoisomerase II in separation of the structural-functional units of the eukaryotic genome [10-13]. More current interests of Ron Hancock were focused on the role of entropic forces in assembly of nuclear compartments and chromatin folding. Ron Hancock was, perhaps, the first biologist who appreciated the important role of these forces in living cells. His experimental works in this area [14-16] constituted a basis for the modern concepts of the nuclear compartments assembly.



Phot. 1. Ron Hancock.

I had the opportunity to work twice in the laboratory of this wonderful man – 3 months in 1990 and 6 months in 1992. The laboratory was very small. In fact, the only person who had a permanent position was Ron himself. The team of temporary employees naturally changed with time. I'll say right away that Ron himself carried out experiments. This is very important, because a person who does experiments himself does not come up with impossible tasks. The atmosphere in the laboratory was very friendly, almost family-like. On my first visit, I



Phot. 2. Ron camping.

stayed at Ron's cottage for quite a while until Ron found me a place to rent. The same thing happened again during the second visit, when I arrived with my family and Olga Iarovaia, a collaborator from my laboratory in Moscow, also came with me. Ron treated all of us, and other laboratory employees, with great warmth and care, and helped solve various everyday issues that inevitably arise when you come to work in another country. I can mention, for example, that he himself came by car to Montreal to meet us at the airport and bring us to Quebec. After my return to Moscow, Ron found a lawyer in Quebec who got me back part of the taxes I had paid.

In the evenings, over a glass of wine in Ron's cottage, there was an informal discussion of science, and a number of other issues. Ron told a lot of interesting things about Quebec and showed us the surrounding sites, first old Quebec itself, and then the waterfalls, Jacques Cartier National Park, the zoo and much more (Phot. 2).

It was very easy and interesting to discuss work with Ron, not only current projects, but also global tasks in general. He somehow imperceptibly identified an interesting topic for discussion and then listened more than he spoke, sometimes making very accurate comments. His "disinterested" attitude towards science was striking. Science was never a career path for him, but rather a passion that was part of his life. After returning from Canada, I met with Ron several times in France and then in Poland. Each such meeting put me in a positive mood. Ron just radiated some kind of calm and confidence. And of course, Ron did the experiments himself until the end and never tried to quickly join some

scientific trend that had become fashionable, but worked on what was really interesting to him. In recent years, this has primarily concerned the role of entropic forces in the organization of the cell nucleus, and of the living cell as a whole.

People like Ron are rare in the modern scientific world. Communication with him helped me take a new look at both science and the tasks of scientists.

REFERENCES

- Hancock R, Park JT (1958) Cell-wall synthesis by *Staphylococcus aureus* in the presence of chloramphenicol. *Nature* 181(4615): 1050-2
- Hancock R (1960) Streptomycin-induced lysis of penicillin-treated staphylococci. *Nature* 186: 658-9
- Fitz-James P, Hancock R (1965) The initial structural lesion of penicillin action in *Bacillus megaterium*. *J Cell Biol* 26(2): 657-67
- Ryser HJ, Hancock R (1965) Histones and basic polyamino acids stimulate the uptake of albumin by tumor cells in culture. *Science* 150(3695): 501-3
- Hancock R, Ryser HJ (1967) Histones in prophase and their possible role in nuclear membrane breakdown. *Nature* 213(5077): 701-2
- Hancock R, Amos H (1968) Nuclear binding of exogenous histones by L cells at low pH. *J Cell Biol* 36(1): C1-3
- Hancock R, Weil R (1969) Biochemical evidence for induction by polyoma virus of replication of the chromosomes of mouse kidney cells. *Proc Natl Acad Sci U S A* 63(4): 1144-50
- Fakan S, Turner GN, Pagano JS, Hancock R (1972) Sites of replication of chromosomal DNA in a eukaryotic cell. *Proc Natl Acad Sci U S A* 69(8): 2300-5
- Russev G, Hancock R (1982) Assembly of new histones into nucleosomes and their distribution in replicating chromatin. *Proc Natl Acad Sci USA* 79(10): 3143-7
- Charron M, Hancock R (1990) DNA topoisomerase II is required for formation of mitotic chromosomes in Chinese hamster ovary cells: Studies using the inhibitor 4'-demethylepipodophyllotoxin 9-(4,6-O-thenylidene- β -D-glucopyranoside). *Biochemistry* 29(41): 9531-7
- Razin SV, Petrov P, Hancock R (1991) Precise Localization of the α -Globin Gene Cluster Within One of the 20- to 300-Kilobase DNA Fragments Released by Cleavage of Chicken Chromosomal DNA at Topoisomerase II Sites in vivo: Evidence that the Fragments are DNA Loops or Domains *Proc Natl Acad Sci USA* 88(19): 8515-9
- Razin SV, Hancock R, Iarovaia O, Westergaard O, Gromova I, Georgiev GP (1993) Structural-functional organization of chromosomal DNA domains. *Cold Spring Harb Symp Quant Biol* 58: 25-35
- Schultz P, Olland S, Oudet P, Hancock R (1996) Structure and conformational changes of DNA topoisomerase II visualized by electron microscopy. *Proc Natl Acad Sci U S A* 93(12): 5936-40
- Hancock R (2000) A new look at the nuclear matrix. *Chromosoma* 109(4): 219-25
- Hancock R (2004) A role for macromolecular crowding effects in the assembly and function of compartments in the nucleus. *J Struct Biol* 146(3): 281-90
- Hancock R (2007) Packing of the polynucleosome chain in interphase chromosomes: evidence for a contribution of crowding and entropic forces. *Semin Cell Dev Biol* 18(5): 668-75