



Observations of an Owl (7)

Take My Genome

There's one thing that overwhelms me with disappointment and utter lack of understanding where the human's science is concerned. It's the fact that our species has never been chosen as a model organism for your biological research. Admittedly, it would be a huge boost to our egocentric owl egos to read intelligent insights

about ourselves in *Nature*, *Cell* and *Science*. (Although, irrespective of such papers I dare say you wouldn't be able to tell us anything new about ourselves).

It is, however, a minor comfort to my ego to know that my fate is not sealed as the *Drosophila* of bird research. Just imagine the scenario! My feathered fellows living in dark cramped cages... monotonously fed the same bad-tasting mice... no chance to fly and hunt... observed and maltreated by students and scientists with sometimes questionable qualifications... No, thanks! The silly chicken definitely serves this purpose better.

Nevertheless, one important fact cannot be overlooked: we owls were thus excluded from the golden age of model organism research. Believe me, it took us a long time to cope with that disrespect.

However, no sooner have we owls rallied ourselves than out of the blue has come the next blatant insult and one that has made us extremely angry. Apparently, we owls are now to be excluded from the next "golden age" of biological research – the age of Omics. Not only have we not been chosen as candidates for a genome project but you haven't even given it a moment's consideration. (Although, I would fly to one of my friend's labs at the drop of a hat to provide the DNA.)

No! Once again, that stupid chicken has been chosen for the first avian genome. Okay, I understand, you humans already have a lot of data about that "model bird". Moreover, your aspirations are to achieve more and larger eggs, not to mention cheaper fried chicken! Apart from that, what else could those ridiculous, pea-brain-clucking, dirt-scrabbling, ground-pecking and bad-flying cock-a-doodle-doos offer from the academic point of view? Take us owls in comparison, we are notorious for our wisdom, sharp eyesight, night activity, elegance... and that's just the tip of the iceberg. I promise you, there are innumerable qualities and major discoveries hidden within our genetic make-up.

I concede that from the human perspective we don't have any economical value. People don't breed us on farms and they don't eat our eggs or us - fortunately! Furthermore, we are neither human pathogens nor do we act as agricultural pests, which means we don't cause you any medical or economical problems. On the other hand, there are countless organisms being sequenced today for no apparent medical or economical reasons at all. Take, for example, the zebra finch (*Taeniopygia guttata*), Darwin's famous pet, which, by the way, will be only the second bird genome so far. Or the sea squirt *Ciona intestinalis*. The motivation behind sequencing this genome was solely down to academic curiosi-

ty since *Ciona* is the smallest of any experimentally manipulable chordate and therefore provides a good system for exploring the evolutionary origins of the chordate lineage, from which all vertebrates sprouted.

Similar arguments hold for the parasitic fungus *Antonospora locustae*, the elephant shark *Callorhynchus milii* or the simple placozoan *Trichoplax adhaerens*, to name but only three more examples. All these organisms are basically being sequenced to enable comparative genomic studies in the context of evolutionary questions.

Whilst we're on the subject of the unfathomable, there are certain organisms where I am left clueless as to what exactly the researchers expect to learn from their genomes. The mid-African hedgehog, *Atelerix albiventris*, for example. What, for goodness sake, for? The genomic sequence of the European hedgehog (*Eri-naceus europaeus*) is already in the pipeline.

Yes, yes, time to pull myself together for the last few lines and stop inflicting you with personal laments about that genome blah, blah. At the end of the day, I actually have nothing against sequencing the genomes of as many organisms as possible and I'll tell you exactly why...

More than forty years ago the French Nobel Prize winner

Jacques Monod said, "What's true for *E. coli* is true for elephants and what's not true for *E. coli* is not true". This statement was actually aimed at the universality of many biochemical and molecular biological mechanisms in all organisms. It is, however, nonsense when it comes to

disciplines like ecology or evolution. These have to use comparative and integrative approaches because the differences between organisms are at the hearts of their fundamental questions.

Well, you all know what ensued. The notion of the molecular biological and biochemical universality led to the triumph of the reductionist approach in biology accompanied by the dominance of only a few model organisms. Differences did not count for much and ecology, evolutionary biology and co. were forced to step back into the shadows for decades.

From that point of view it is ironic that it is exactly the ultimate technical culmination of molecular biology – high throughput genomics – which has clearly revealed the limitations of reductionism and thrust comparative and integrative biology back into the spotlight. Comparative genomics, metagenomics and even systems biology, the new daughter of Omics and computational biology, have quickly become powerful tools in tackling questions of ecology and evolution. Remember *Ciona et al.*, above.

In the light of that development, I am quite optimistic that I'll live to see the sequencing of our owl genome at some point in the near future. Even if the ultimate motivation might only be to keep the expensive machines running in some obscure genome centre.

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"Again we owls seem to be excluded from another 'golden age' of biological research – the age of Omics."

