

## Cause and Consequence of Purkinje Cell Signals in the Cerebellar Flocculus

1. Complex spikes of floccular Purkinje cells transmit nonvisual signals related to head and eye movement in addition to retinal image slip, thereby incorporating both cause and consequence of optokinetically evoked eye movements. (*This thesis*)
2. Because floccular complex spikes report only retinal image slip that cannot be anticipated on the basis of neural signals related to self-motion, they can be interpreted as representing a prediction error rather than an error in motor execution. (*This thesis*)
3. The observation that the simple spike directional tuning to optokinetic stimulation is dispersed over the great circle that transects the two complex spike best-response axes indicates that climbing fiber input may shape the directional tuning of the simple spikes, but that reciprocal firing of complex and simple spikes is not the universal modus operandi of floccular Purkinje cells. (*This thesis*)
4. The notion that the output of floccular Purkinje cells constitutes a motor command driving eye movement is not consistent with the observation that eye movement leads complex spike and simple spike activity by a few milliseconds in most floccular Purkinje cells. (*This thesis*)
5. Long pauses in Purkinje cell simple spike activity and toggling by complex spikes are signatures of membrane potential bistability, that frequently occur in anesthetized animals, but very rarely in healthy animals that are awake. (*This thesis*)
6. Depicting the vestibulo-ocular reflex (VOR) as a distinct oculomotor subsystem independent of and complementary to the optokinetic reflex is not realistic, as the VOR needs the presence of vision to be at all useful.
7. The complexity of a scientific experiment determines to a great extent what level of complexity of the system under scrutiny can be disclosed: if all you have is a hammer, you will find yourself unable to nail a problem that looks like simple spikes.
8. Exploratory research is a necessary but risky business: when you go on a fishing expedition, you better confirm abundance and avoid catching red herring.
9. Although very few researchers will go as far as to make up their own data, many will “torture the data until they confess”, and forget to mention that the results were obtained by torture. (Erik-Jan Wagenmakers)
10. The most terrifying fact about the universe is not that it is hostile but that it is indifferent, but if we can come to terms with this indifference, then our existence as a species can have genuine meaning. However vast the darkness, we must supply our own light. (Stanley Kubrick)
11. Done is better than perfect. (Sheryl K. Sandberg)