As a model organism, zebrafish exhibit robust behavioral endpoints, which can be quantified to yield translational data, especially for measuring exploratory behavior. In addition to conventional exploratory-based models (such as the novel tank test), new assays are emerging for high-throughput phenotyping of zebrafish behavior, such as the light/dark box and open field tests. The light/dark environment to model zebrafish anxiety has been established previously, yet we have further demonstrated that “more aversive” light behaviors in zebrafish may be modulated by anxiogenic and anxiolytic drugs, paralleling mouse light/dark behaviors. Furthermore, the open field test has previously only been applied to larval models. However, we suggest that it would be a promising apparatus to employ in adults. We have already observed that in addition to the standard exploratory behaviors, zebrafish also display an overt “homebase” behavior in which one section of a open arena is chosen as a preferred dwelling for the duration of the test trial. Much like rodent models, as they habituate to the novel arena, zebrafish predictably stray into the open central area, showing increased exploration. However, the fish also possess a significantly higher tendency to inhabit and/or return to a particular (random) section. The observations from these new paradigms further suggest that zebrafish exploration appears to be driven by the same, evolutionarily conserved factors as rodent behavior. We also see that, specific to the homebase behavior, zebrafish are able to form spatial memories and cognitive maps, which is in line with previous findings utilizing this species.