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## Web watch

### A MAP OF MRNA LOCALIZATION

- <http://fly-fish.cabr.utoronto.ca>

Contrary to expectations, many *Drosophila melanogaster* mRNA transcripts appear to be localized prior to translation, report Henry Krause and colleagues in *Cell*.

Localization of mRNA before translation offers some advantages over immediate translation — for example, several rounds of translation can occur at a subcellular location, bypassing the energetically costly need to move proteins individually. However, estimates had predicted that only 1–10% of mRNA transcripts are localized prior to translation.

To test these estimates, researchers used high-resolution fluorescent *in situ* hybridization (FISH) to analyse 2,314 embryonically expressed *D. melanogaster* mRNAs. Strikingly, 71% of the embryonically expressed mRNAs were specifically localized.

mRNA transcripts localized into ~35 categories, including subembryonic categories and subcellular categories. Given the diversity and frequency of the localization patterns observed, and given the close correlation between mRNA localization and protein translation, the authors propose that many, if not most, cellular functions are regulated by mRNA localization. For example, the fact that the temporal localization of *anillin* mRNA, which encodes an actin-interacting protein, resembles subsequent actin-filament distribution suggests that mRNA localization is involved in the organization of cytoskeletal networks.

To make the most of their extensive data, the Krause team catalogued their findings on *Fly-FISH*, which is searchable by genes and localization categories. As such, it offers promise for various lines of inquiry. For instance, the spatio-temporal data it contains may provide insight into gene regulatory networks, and the ability to assess mRNA localization with colocalization of other mRNAs and proteins may help to uncover the functions of uncharacterized genes.

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