

L18 Microguard Detergent

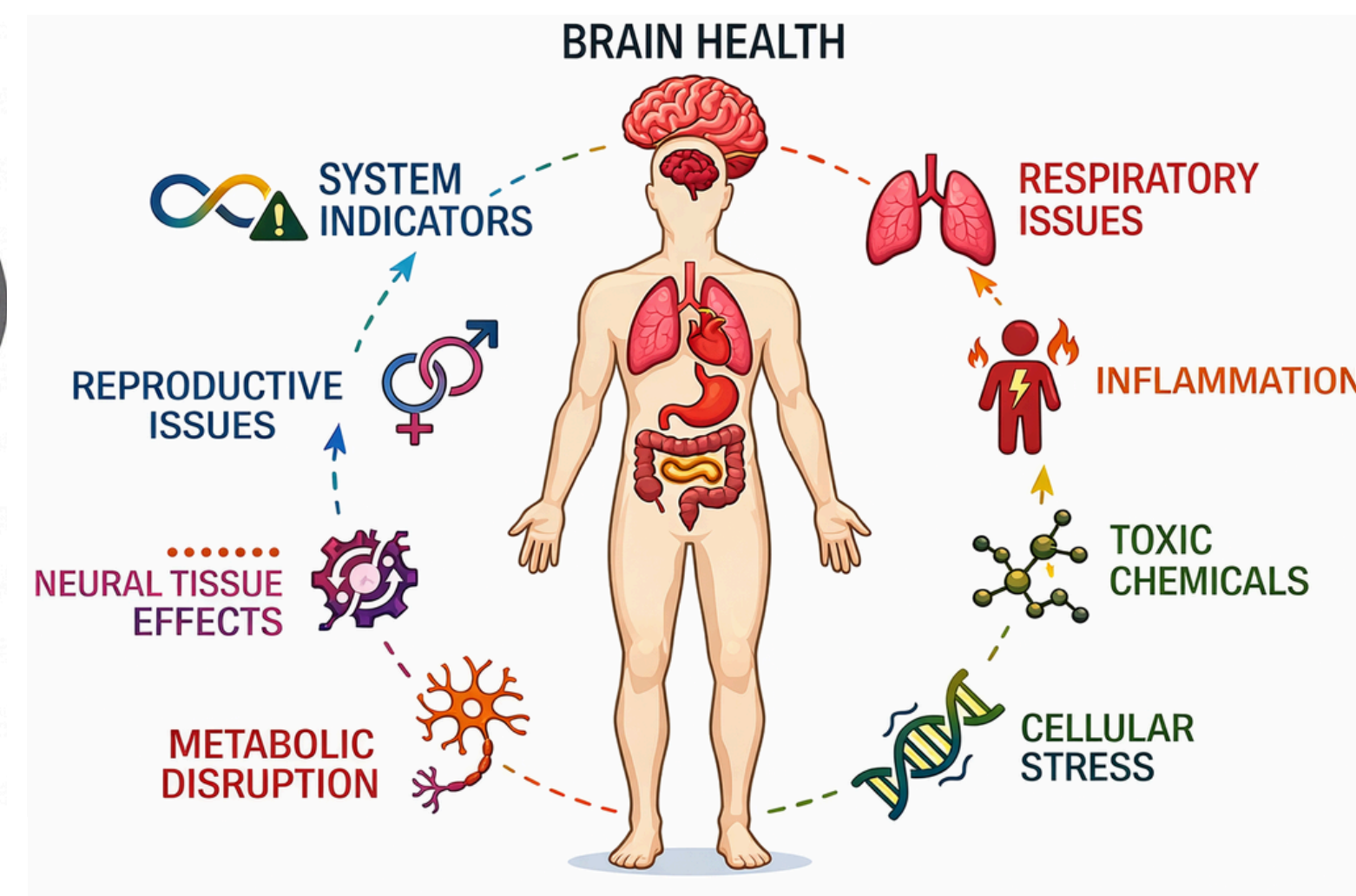
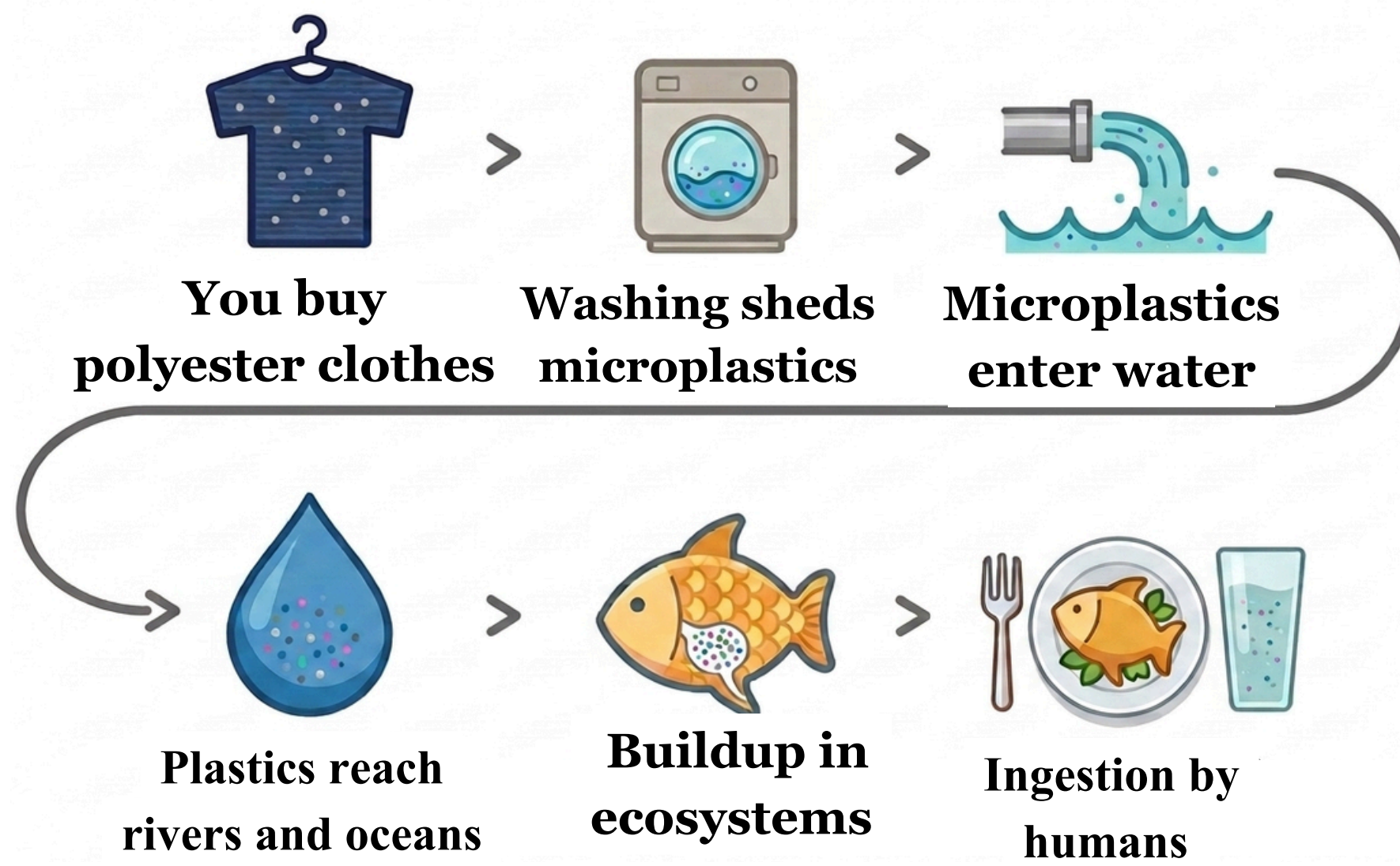
How Might We Reduce Microplastics Shedding from Laundry?

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Problem Space

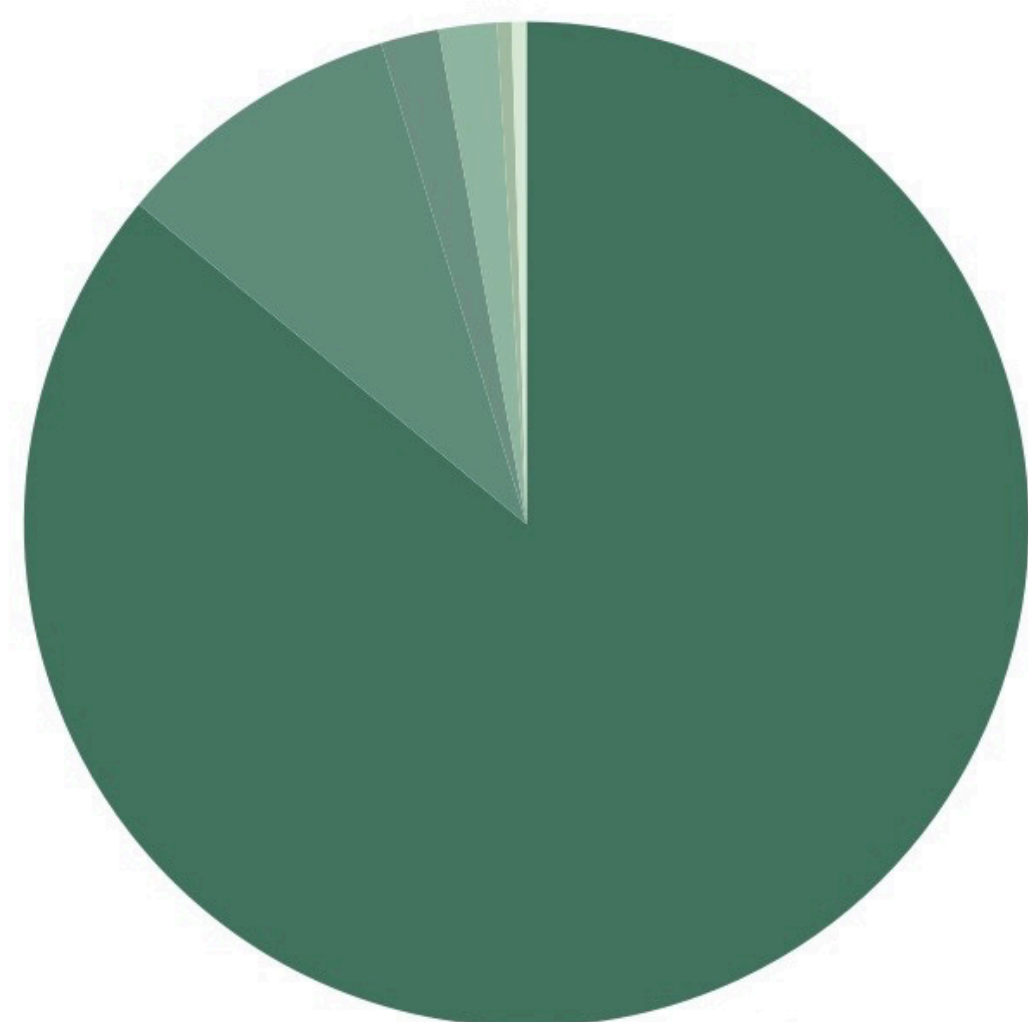
700,000+ microfibers are released in a single wash, contributing to 35% of ocean microplastics.

- Synthetic fabrics = polyester, nylon
- Washing causes fiber shedding



Composition of Our Detergent

- Water (93%)
- Magnesium Hydroxide (5%)
- Baking Soda (1%)
- Silicone Grease (1%)
- Guar Gum (0.5%)
- Xanthan Gum (0.5%)



BEFORE



AFTER

Status Quo



- **Filters** are inconvenient to use
- **High cost** (\$20/gal, \$46 for ball)
- **Low effectiveness** of microplastics filtering

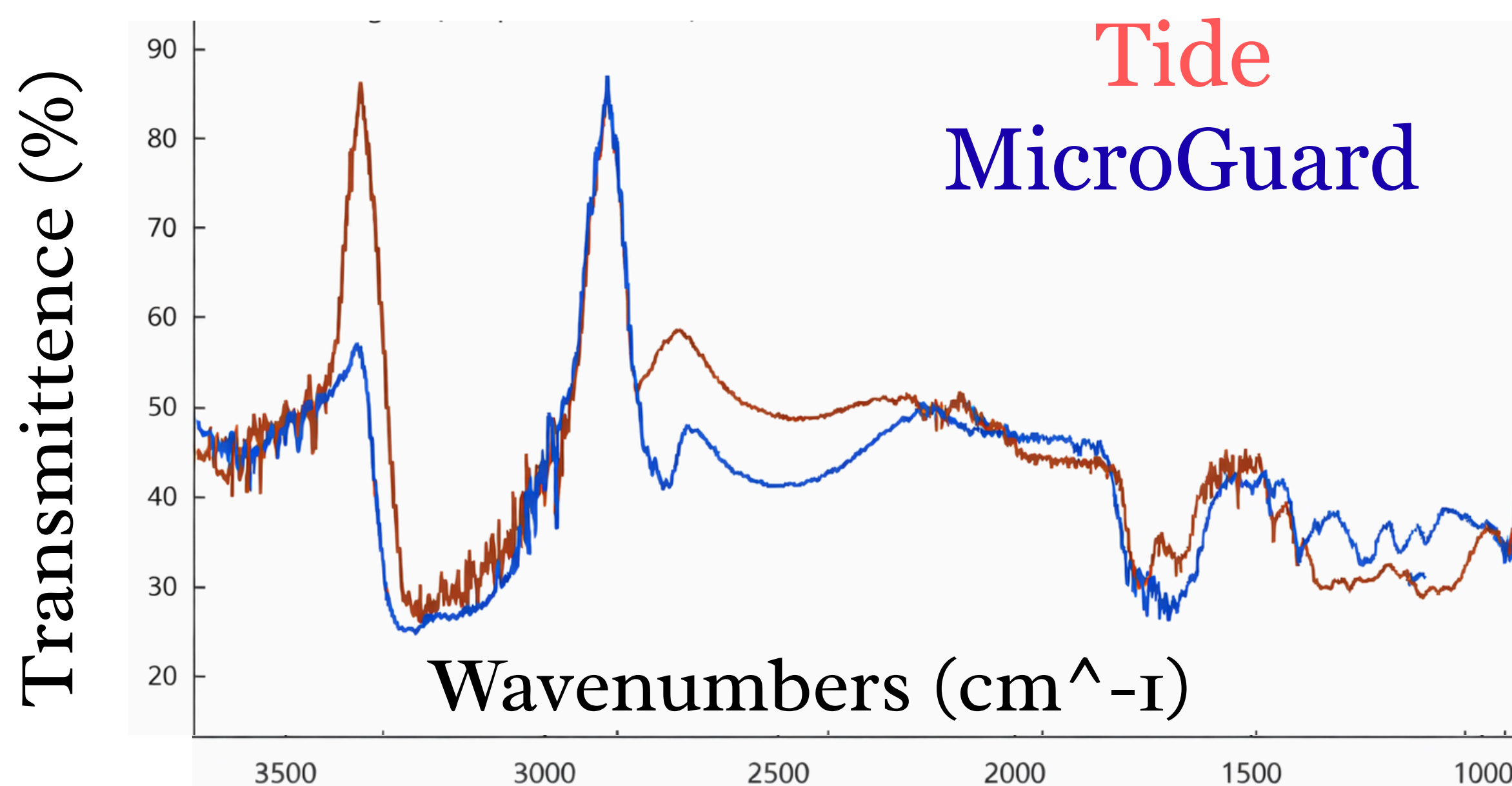
Our Solution



- **Built-in** to the detergent
- **Lower cost** (\$15/gal)
- **Effective** at preventing plastic shedding

The Experiment

- **Tested our detergent** against ECOS, Tide, and plain water.
- **Performed FTIR Spectroscopy** to detect microplastics
- Washed clothes by hand to **remove stains**



Future Plans



- Experiment with different compositions of chemicals
- Test with washing machine



- Raman spectroscopy
- Microscopy
- Isolating solid residues before FTIR



- Target wealthier, environmentally conscious customers
- Organic grocery stores