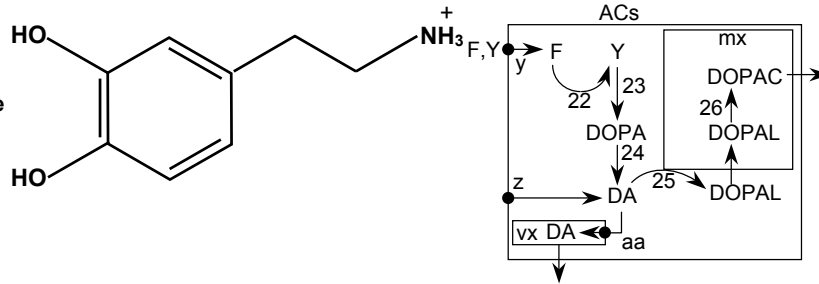


**Table 5: Dopamine**

**3,4 dihydroxyphenethylamine**  
**MW: 153.18**  
**cation at neutral pH**

**Localization:**  
**ACs, IPCs**



| Metabolism: enzyme                   | EC        | map | site | reactants | → | products   |
|--------------------------------------|-----------|-----|------|-----------|---|------------|
| 22 phenylalanine 4-monooxygenase     | 1.14.16.1 | F3  | c    | F + BH4   | → | Y + BH2    |
| 23 tyrosine 3-monooxygenase          | 1.14.16.2 | G2  | c    | Y + BH4   | → | DOPA + BH2 |
| 24 aromatic L-aa decarboxylase       | 4.1.1.28  | G2  | c    | DOPA      | → | DA         |
| 25 amine oxidase (flavin containing) | 1.4.3.4   | G2  | mom  | DA        | → | DOPAL      |
| 26 aldehyde dehydrogenase (DHA5)     | 1.2.1.3   | G2  | mx   | DOPAL     | → | DOPAC      |

**Transporters**

| plasma membrane                 | TC         | Localization | synaptic vesicles | TC         | Localization |
|---------------------------------|------------|--------------|-------------------|------------|--------------|
| y TAT1 Na <sup>+</sup> -coupled | 2.A.1.13.2 | ?            | aa VMAT2          | 2.A.1.22.1 | Φ brain vm   |
| z DAT Na <sup>+</sup> -coupled  | 2.A.22.1.3 | Φ ACs, IPCs  |                   |            |              |

**Receptors: Heptahelical**

GPCR Class A DAR Gs  
 GPCR Class A DAR Gi/o

**Subtypes**

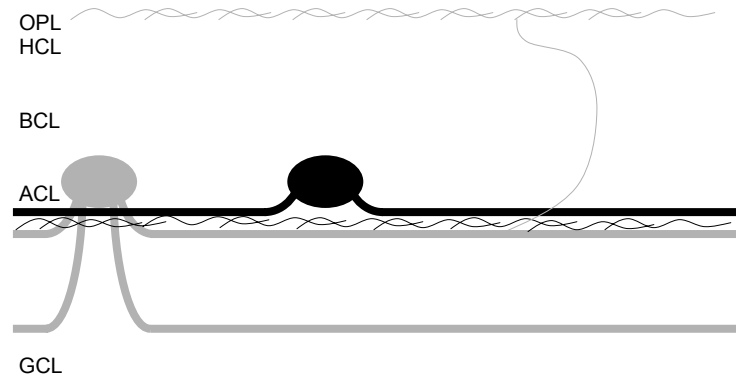
D1,D5 ∇ PRs, ACs Φ HCs, BCs, ACs, GCs, MCs, RPE  
 D2,3,4 ∇ PRs (D4) ACs (D2) Φ PRs, HCs

**Abbreviations: see Tables 1-4**

BH2: dihydrobiopterin  
 BH4: tetrahydrobiopterin

DA: dopamine  
 DOPA: dihydroxyphenylalanine  
 DOPAC: dihydroxyphenylacetate

DOPAL: dihydroxyphenylacetaldehyde



Neurons expressing a dopaminergic phenotype are conventional ACs in most species (black) and arborize in the distal inner plexiform layer with dendritic (heavy lines) and dense axonal fields (fine mesh). Many species exhibit very sparse IPC-like processes targeting the outer plexiform layer. Advanced fishes (teleosts) possess a dopaminergic IPC (grey) with a unique, dense axonal field in the outer plexiform layer and multistratified inner plexiform layer arborizations.