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| **GPCR** | **Class** | **Biological function** | **Species** | **Ligands** | **Regulating behaviors** | **References** |
| Classical | I | α-factor pheromone receptor | *A. fumigatus*  (GprA) | / | sexual/ asexual development | [35] |
| *A. nidulans*  (GprA) | / | self-fertilization,  sexual development | [41] |
| *A. oryzae*  (GprA) | / | sexual/ asexual development | [32] |
| *Saccharomyces cerevisiae*  (Ste2) | α-factor | cell division and conjugation. | [42] |
| *N. crassa*  (PRE-2) | pheromone CCG-4 | sexual/asexual development  (post-fertilization) | [43] |
|  | II | a-factor pheromone receptor | *A. fumigatus*  (GprB) | / | sexual/ asexual development | [35] |
| *A. nidulans*  (GprB) | / | self-fertilization,  sexual development | [41] |
| *A. oryzae*  (GprB) | / | sexual/ asexual development | [32] |
| *S.cerevisiae*  (Ste3, Ste6) | a-factor | sexual/ asexual development, multiple drug resistance | [42] |
| *N. crassa*  (PRE-1) | GNA-1 | sexual development | [44] |
|  | Ⅲ | Carbon source sensors | *A. fumigatus*  (GprC, GprD) | carbohydrate,  oxylipin,  cAMP | mycotoxin production  (fumitremorgin, pseurotin A）,  adaptation of stress signaling | [45] |
| *A. flavus*  (GprC, GprD) | carbohydrate,  oxylipin,  cAMP | quorum sensing, sporulation, sclerotia formation, and AF biosynthesis | [46] |
| *A. oryzae*  (GprC, GprD) | carbohydrate | DHN-melanin production | [32] |
| *S.cerevisiae* (Gpr1) | glucose sucrose | pseudohyphal differentiation | [47] |
|  | *N.crassa*  (GPR-4) | glycerol | asexual development | [48] |
| *A. nidulans*  (GprC, GprD, GprE) | carbohydrate | sterigmatocystin production, hyphal growth and conidial germination | [44] |
|  | IV | Nitrogen/Nutrient source sensors | *A. fumigatus*  (GprF, GprG, GprJ) | nitrogen source | DHN-melanin production | [35] |
| *A. oryzae*  (GprF, GprG, GprJ) | nitrogen source | / | [32] |
| *Cryptococcus neoforme*(Gpr4) | methionine | capsule production,  asexual development | [17] |
| *S. cerevisiae* (Ypq1p) | amino acids | nutrition | [49] |
| *N. crassa*  (Gpr-5,Gpr-6) | amino acids | nutrition | [50] |
| *A. nidulans*  (GprF, GprG, GprJ) | nitrogen source | / | [44] |
|  | V | cAMP receptor-like (CRL) | *A. fumigatus*  (GprH, GprI, GprL) | carbon,  amino acid | hyphal growth | [35] |
| *A. nidulans*  (GprH, GprI) | glucose,  tryptophan,  cAMP | Primary metabolism, hyphal growth and sexual reproduction | [38] |
| *A. oryzae*  (GprH) | / | / | [32] |
| *Dictyostelium discoideum*  (CrlA) | cAMP | cell growth and developmental morphogenesis | [51] |
| *N. crassa*  (Gpr-1、2、3) | cAMP | sexual/ asexual development | [50] |
| *Trichoderma atroviride*  (Gpr-1-4) | carbohydrate ,  cAMP | conidial germination,  vegetative growth | [52] |
|  | IX | Microbial opsins | *A. fumigatus*  (NopA) | light | secondary metabolism | [35] |
| *A. nidulans*  （NopA） | / | / | [32] |
| *A. oryzae*  （NopA） | / | / | [32] |
| *N. crassa*  (NOP-1, ORP-1) | light | asexual developmentact | [32] |
| Novel | VI | RGS domain- containing | *A. fumigatus*  (GprK) | carbon sources | asexual development, gliotoxin production, oxidative stress response | [53] |
| *A. nidulans*  (GprK) | / | / | [32] |
| *A. oryzae*  (GprK) | / | / | [32] |
|  | VII | Homelogous to rat growth hormone releasing factor receptors | *A. fumigatus*  (GprM) | xylose | DHN-melanin production | [54] |
| *A. nidulans*  (GprM, GprN) | / | / | [32] |
|  | *A. oryzae*  (GprM) |  |  | [32] |
|  | VⅢ | mPR-like/PAQR (homologous to yeast Izh, zinc regulators) | *A. fumigatus*  (GprO、GprP) | steroid | metabolism of lipids and phosphate | [32] |
| *A. nidulans*  (GprO, GprP) | / | / | [32] |
| *A. oryzae*  (GprO, GprP) | / | / | [32] |
| *S. cereviside*  (IZH2、 IZH3) | progestin and progesterone | drug resistance (polyene antifungal), fungal filamentation | [55] |
|  | X | Lung 7TM Superfamily or PTMI-like GPCR | *S. cereviside*  (Ptm1) | / | / | [56] |
|  | XI | GPCR89/ABA-GPCR | *N crassa*  (Gpr-12) | / | / | [35] |
| *S. cereviside*  (HGI1) | glucose | high glucose stress response | [57] |
|  | XII | Family C-like | *N. crassa*  (Gpr-13) | / | / | [35] |
|  | XⅢ | DUF300 superfamily/PSGPR11 | *N. crassa*  (Gpr-14) | / | / | [35] |
| Structurally different | XIV | Pth11 and Pthl1-like | *N. crassa*  (Gpr-15, Gpr-23, Gpr-29) | cellulose materials,  plant cell walls | sexual/ asexual development,  hyphal growth | [50] |

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