

GSDM家族蛋白的结构和功能分析

The structure and function analyze of GSDM family

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ARTICLE

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Cleavage of GSDMD by inflammatory caspases determines pyroptotic cell death

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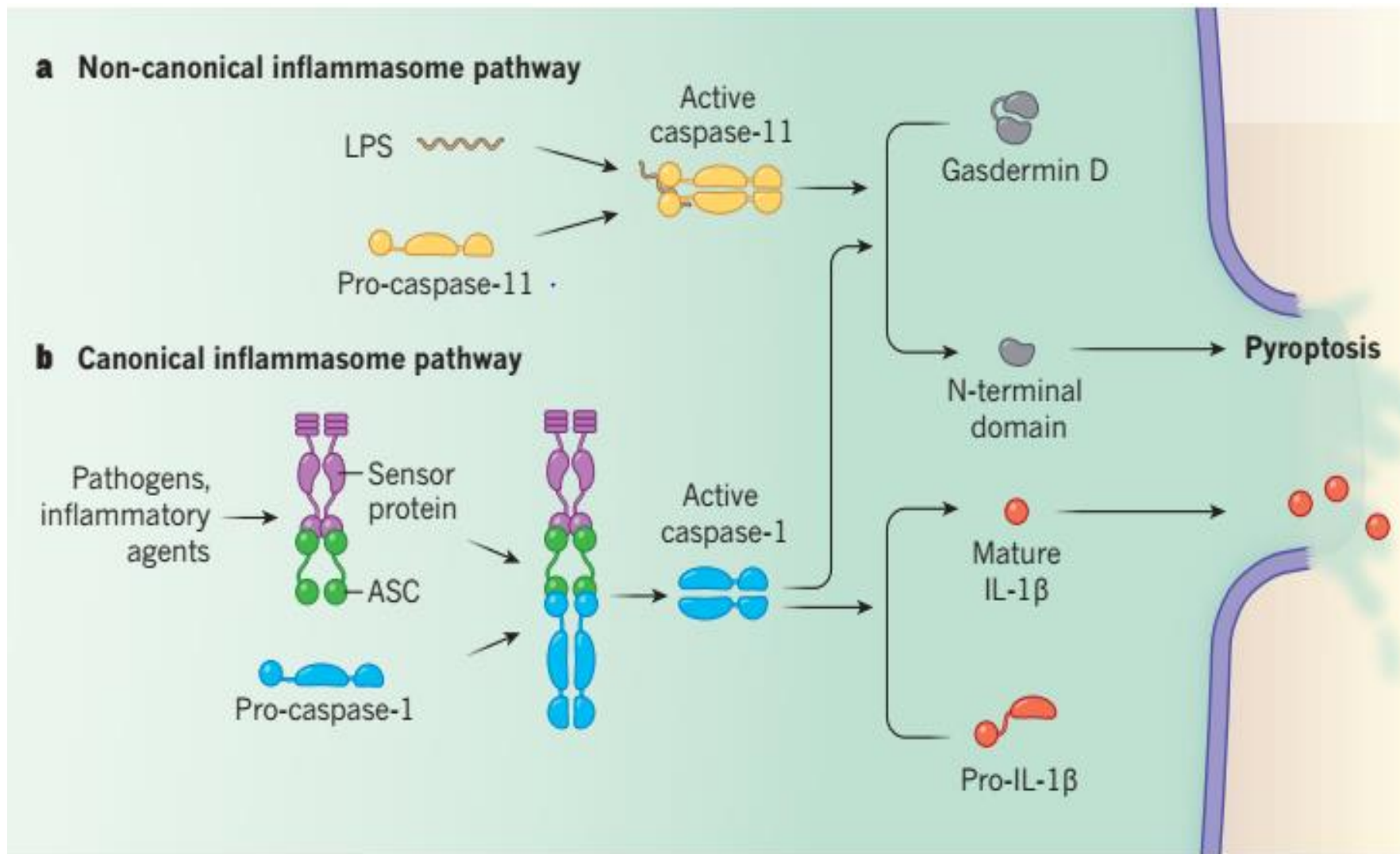
ARTICLE

doi:10.1038/nature15541

Caspase-11 cleaves gasdermin D for non-canonical inflammasome signalling

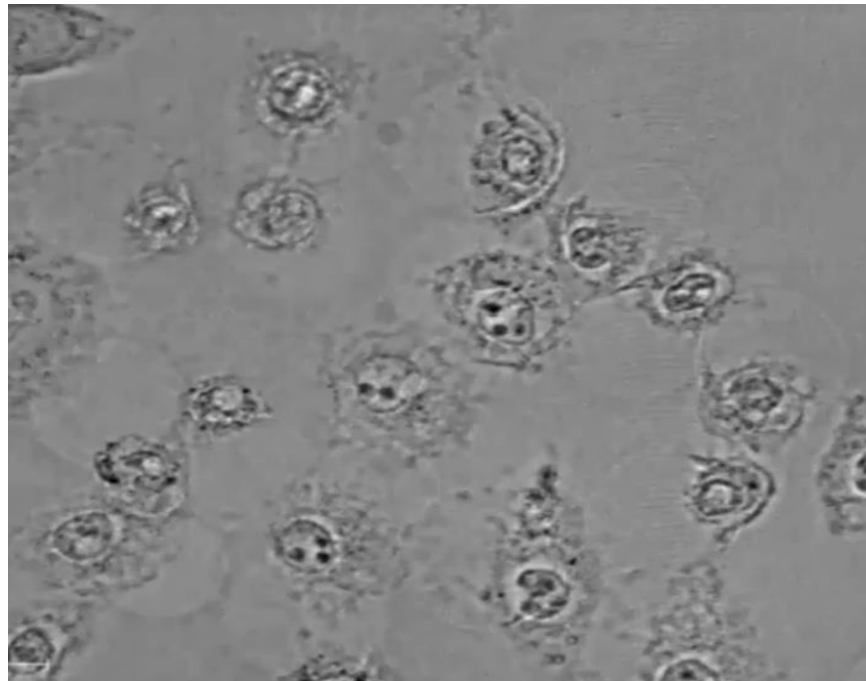
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炎症反应简介



细胞焦亡（pyroptosis）简介

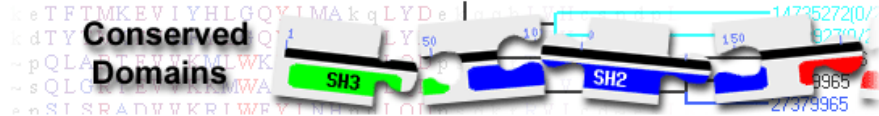

- 细胞焦亡（pyroptosis）是近年来发现并证实的一种新的细胞程序性死亡方式。
- 细胞焦亡过程中，细胞膜上会有小孔形成，细胞溶胀、质膜破裂，然后导致细胞内容物大量外泄引发炎症反应。细胞焦亡与细胞凋亡的形态特征、发生机制等有明显不同。



GSDMD蛋白简介

- *GSDMD*定位于人的第八号染色体上，编码484个氨基酸，含有14个外显子。*GSDMD*蛋白是经典和非经典炎症反应途径的下游非常重要的靶蛋白，它被caspase切割后会引起细胞焦亡。
- 实验分析表明，在293T细胞中分别过表达*GSDMD*蛋白的N端，C端以及全长的蛋白，*GSDMD*的N端会引起大量的细胞死亡并表现出明显的细胞焦亡的特征。
- GSDMD P57764
- <http://www.uniprot.org/uniprot/P57764>

利用CD-search对GSDMD蛋白进行分析



Conserved Domains

HOME SEARCH GUIDE NewSearch Structure Home 3D Macromolecular Structures Conserved Domains Pubchem BioSystems

Conserved domains on [gi|83320070|ref|NP_079012|] View **Concise Results** ?

gasdermin-D [Homo sapiens]

Graphical summary Zoom to residue level show extra options » ?

Query seq. Specific hits Superfamilies

Gasdermin Gasdermin superfamily

Search for similar domain architectures ? Refine search ?

List of domain hits ?

| Name | Accession | Description | Interval | E-value |
|---------------|-----------|---------------------------------------------------------------------------------------------|----------|---------|
| [+] Gasdermin | pfam04598 | Gasdermin family; The precise function of this protein is unknown. A deletion/insertion ... | 4-456 | 0e+00 |

References:

- Marchler-Bauer A et al. (2015), "CDD: NCBI's conserved domain database.", *Nucleic Acids Res.*43(D)222-6.
- Marchler-Bauer A et al. (2011), "CDD: a Conserved Domain Database for the functional annotation of proteins.", *Nucleic Acids Res.*39(D)225-9.
- Marchler-Bauer A et al. (2009), "CDD: specific functional annotation with the Conserved Domain Database.", *Nucleic Acids Res.*37(D)205-10.
- Marchler-Bauer A, Bryant SH (2004), "CD-Search: protein domain annotations on the fly.", *Nucleic Acids Res.*32(W)327-331.

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<https://www.ncbi.nlm.nih.gov/Structure/cdd/wrpsb.cgi>

GSDM家族蛋白简介

- gasdermin family
- [http://www.uniprot.org/uniprot/?query=family%3A"gasdermin+family"+AND+organism%3A"Human+%5B9606%5D"&sort=score](http://www.uniprot.org/uniprot/?query=family%3A)

Suggest adding column(s): Protein families ✕

| Entry | Entry name | Protein names | Gene names | Organism | Length |
|--------|-------------|----------------------------------------|-------------------------------|----------------------|--------|
| P57764 | GSDMD_HUMAN | Gasdermin-D | GSDMD DFNA5L, GSDMDC1, FKSG10 | Homo sapiens (Human) | 484 |
| O60443 | DFNA5_HUMAN | Non-syndromic hearing impairment pr... | DFNA5 ICERE1 | Homo sapiens (Human) | 496 |
| Q8TAX9 | GSDMB_HUMAN | Gasdermin-B | GSDMB GSDML, PP4052, PRO2521 | Homo sapiens (Human) | 411 |
| Q9BYG8 | GSDMC_HUMAN | Gasdermin-C | GSDMC MLZE | Homo sapiens (Human) | 508 |
| Q96QA5 | GSDMA_HUMAN | Gasdermin-A | GSDMA GSDM, GSDM1, FKSG9 | Homo sapiens (Human) | 445 |
| Q0ZLH3 | PJKV_HUMAN | Pejvakin | DFNB59 PJKV | Homo sapiens (Human) | 352 |

GSDM家族蛋白简介

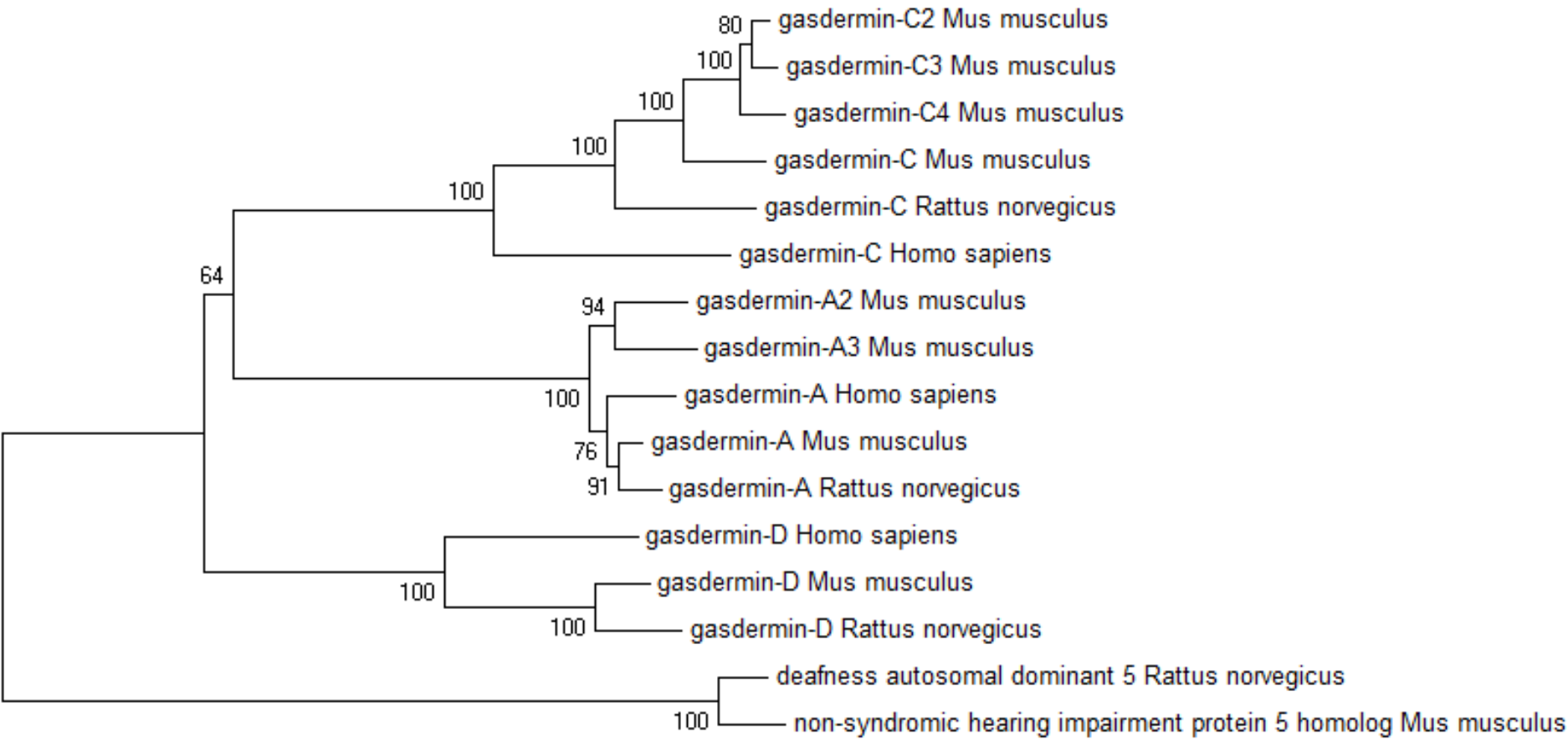
- GSDM (Gasdermin domain containin) 家族蛋白是一类含有 Gasdermin 结构域的蛋白家族, 包括GSDMA (Gasdermin-A)、GSDMB (Gasdermin-B)、GSDMC (Gasdermin-C)、GSDMD (Gasdermin-D)、DFNA5 (Non-syndromic hearing impairment protein)、DFNB59 (Pejvakin) 六种蛋白, GSDM 蛋白家族大约有45%的序列同源性。
- Gasdermin结构域可以分为两部分, gasdermin-N 和 gasdermin - C 结构域, 目前认为GSDM家族蛋白具有相似的自抑制机制, 当受到外来信号刺激时可以释放出具有活性的N端结构域。

| Protein names | Gene names | 表达及功能 | 定位及编码 |
|-------------------------------------------------|----------------------|--------------------------------------------------|----------------------------------|
| Gasdermin-D | <i>GSDMD</i> | 作用于经典和非经典炎症反应途径的下游，引起细胞焦亡 | 人8号染色体，编码484个氨基酸，14个外显子 |
| Non-syndromic hearing impairment protein | <i>DFNA5</i> | 在多种肿瘤中都发现了具有重要作用，可能是一种抑癌基因 | 人7号染色体，编码496个氨基酸，11个外显子 |
| Gasdermin-B | <i>GSDMB</i> | 在乳腺、软骨和大肠肿瘤，正常肝脏、脾脏、皮肤和肌肉有较高表达 | 人17号染色体，9个外显子，8个内含子，存在多种剪接形式的转录本 |
| Gasdermin-C | <i>GSDMC</i> | 多表达于人的气管及脾脏中，可能是肿瘤抑制因子 | 人8号染色体上，含有12个外显子 |
| Gasdermin-A | <i>GSDMA</i> | 主要在胃肠道细胞中表达 | 人17号染色体，8个外显子，编码445个氨基酸 |
| Pejvakin | <i>DFNB59</i> | 在检测的人的组织，如大脑、眼、肾脏、肝脏、肺、心脏等组织中都有表达，主要作用于听觉通路的神经元中 | 人2号染色体，含有7个外显子，编码352个氨基酸 |

建树分析一直系同源序列

| | Description | Max score | Total score | Query cover | E value | Ident | Accession |
|-------------------------------------|------------------------------------------------------------------------------------|-----------|-------------|-------------|---------|-------|--------------------------------|
| <input checked="" type="checkbox"/> | gasdermin-D [Homo sapiens] | 979 | 979 | 100% | 0.0 | 100% | NP_079012.3 |
| <input checked="" type="checkbox"/> | gasdermin-D [Mus musculus] | 489 | 489 | 99% | 2e-173 | 58% | NP_081236.1 |
| <input checked="" type="checkbox"/> | gasdermin-D [Rattus norvegicus] | 481 | 481 | 99% | 7e-171 | 55% | NP_001124025.1 |
| <input checked="" type="checkbox"/> | gasdermin-A [Rattus norvegicus] | 208 | 208 | 98% | 7e-65 | 34% | NP_001101767.1 |
| <input checked="" type="checkbox"/> | gasdermin-A [Mus musculus] | 197 | 197 | 98% | 1e-60 | 33% | NP_067322.1 |
| <input type="checkbox"/> | gasdermin domain containing protein RGD1359449 [Rattus norvegicus] | 197 | 197 | 84% | 2e-60 | 33% | NP_001014106.1 |
| <input checked="" type="checkbox"/> | gasdermin-A [Homo sapiens] | 186 | 186 | 98% | 1e-56 | 32% | NP_835465.2 |
| <input checked="" type="checkbox"/> | gasdermin-A3 [Mus musculus] | 187 | 187 | 99% | 1e-56 | 33% | NP_001007462.1 |
| <input checked="" type="checkbox"/> | gasdermin-A2 [Mus musculus] | 184 | 184 | 99% | 6e-56 | 32% | NP_084003.2 |
| <input checked="" type="checkbox"/> | gasdermin-C [Homo sapiens] | 178 | 178 | 99% | 5e-53 | 30% | NP_113603.1 |
| <input checked="" type="checkbox"/> | gasdermin-C [Rattus norvegicus] | 148 | 148 | 98% | 2e-42 | 30% | NP_001127967.1 |
| <input checked="" type="checkbox"/> | gasdermin-C2 [Mus musculus] | 143 | 143 | 99% | 2e-40 | 30% | NP_808580.2 |
| <input checked="" type="checkbox"/> | gasdermin-C3 [Mus musculus] | 139 | 139 | 99% | 7e-39 | 30% | NP_899017.2 |
| <input checked="" type="checkbox"/> | gasdermin-C [Mus musculus] | 132 | 132 | 99% | 1e-36 | 27% | NP_113555.1 |
| <input checked="" type="checkbox"/> | gasdermin-C4 [Mus musculus] | 125 | 125 | 99% | 5e-34 | 28% | NP_083268.1 |
| <input checked="" type="checkbox"/> | non-syndromic hearing impairment protein 5 homolog [Mus musculus] | 57.8 | 57.8 | 45% | 8e-12 | 26% | NP_061239.1 |
| <input checked="" type="checkbox"/> | deafness, autosomal dominant 5 [Rattus norvegicus] | 47.4 | 47.4 | 36% | 2e-08 | 27% | NP_001178678.1 |

建树分析一直系同源序列

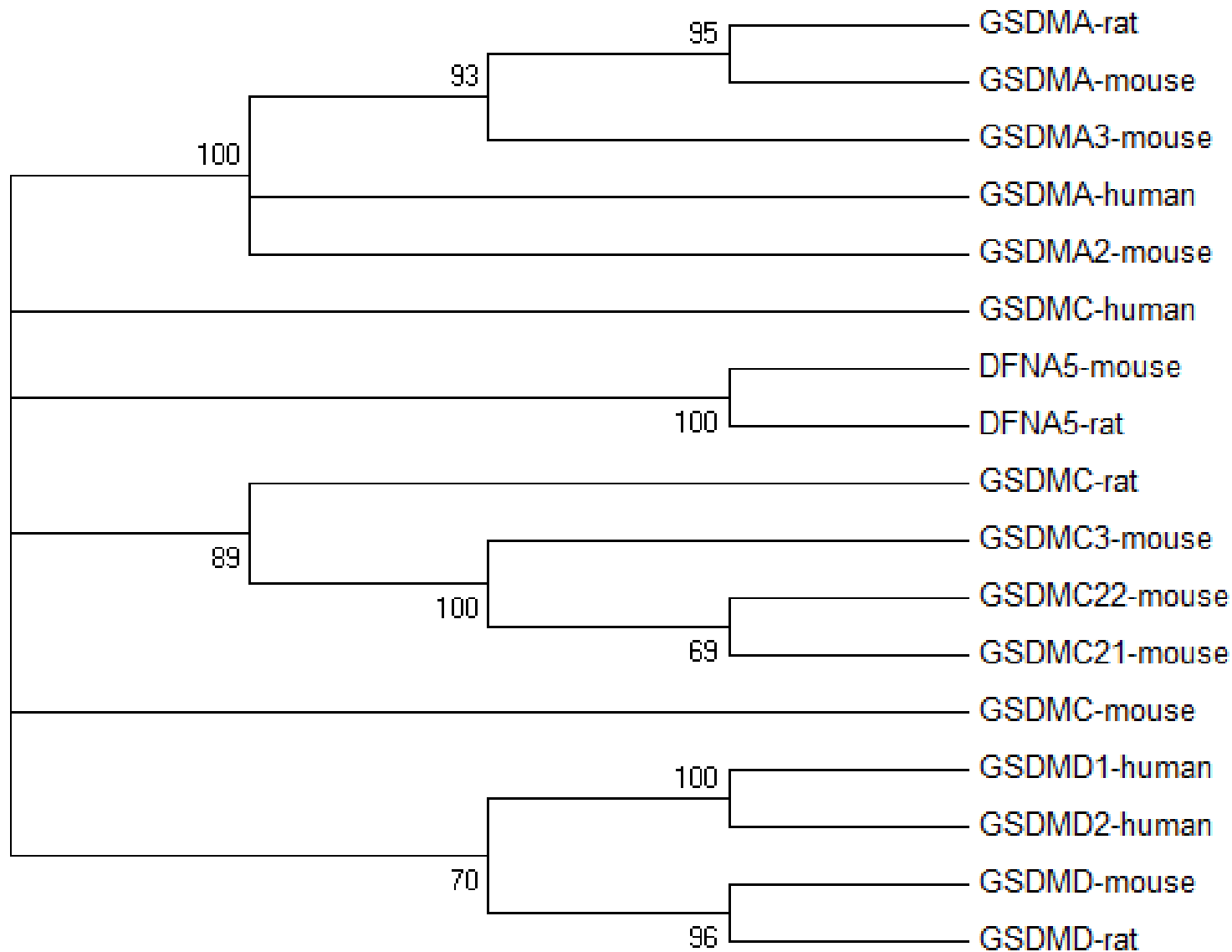


0.20

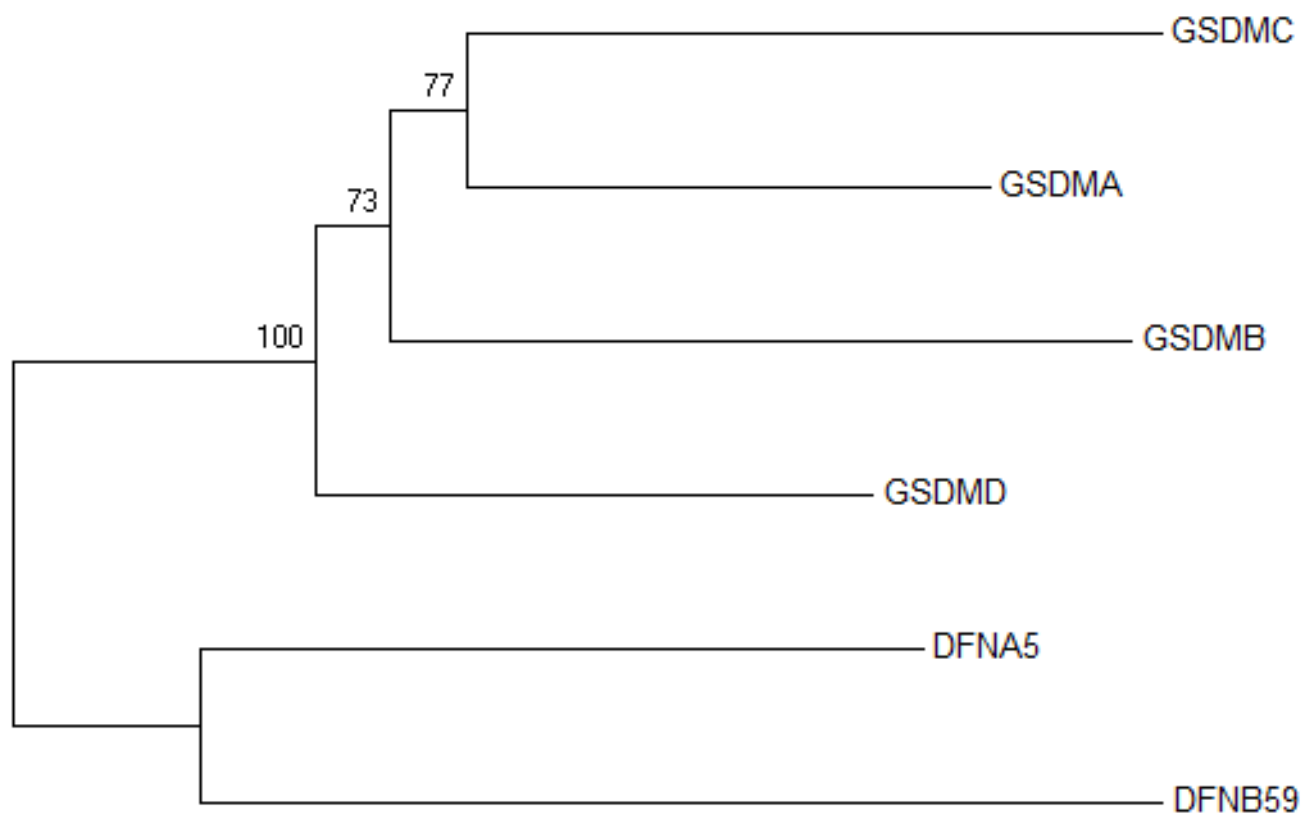
建树分析一直系同源序列

| | Description | Max score | Total score | Query cover | E value | Ident | Accession |
|-------------------------------------|-----------------------------------------------------------------------------------------------------|-----------|-------------|-------------|---------|-------|--------------------------------|
| <input checked="" type="checkbox"/> | Homo sapiens gasdermin D (GSDMD), transcript variant 1, mRNA | 813 | 813 | 100% | 0.0 | 85% | NM_024736.6 |
| <input checked="" type="checkbox"/> | Homo sapiens gasdermin D (GSDMD), transcript variant 2, mRNA | 812 | 812 | 100% | 0.0 | 85% | NM_001166237.1 |
| <input checked="" type="checkbox"/> | Mus musculus gasdermin D (Gsdmd), mRNA | 407 | 407 | 95% | 1e-139 | 51% | NM_026960.4 |
| <input checked="" type="checkbox"/> | Rattus norvegicus gasdermin D (Gsdmd), mRNA | 394 | 394 | 96% | 8e-135 | 48% | NM_001130553.1 |
| <input checked="" type="checkbox"/> | Rattus norvegicus gasdermin A (Gsdma), mRNA | 153 | 153 | 96% | 2e-42 | 28% | NM_001108297.1 |
| <input checked="" type="checkbox"/> | Mus musculus gasdermin A (Gsdma), mRNA | 147 | 147 | 45% | 2e-40 | 38% | NM_021347.4 |
| <input type="checkbox"/> | Rattus norvegicus gasdermin domain containing protein RGD1359449 (RGD1359449), mRNA | 145 | 188 | 60% | 2e-40 | 35% | NM_001014084.1 |
| <input type="checkbox"/> | Mus musculus gasdermin C-like, pseudogene (Gsdmcl-ps), non-coding RNA | 142 | 142 | 81% | 3e-39 | 29% | NR_029414.1 |
| <input checked="" type="checkbox"/> | Mus musculus gasdermin A3 (Gsdma3), mRNA | 140 | 140 | 45% | 5e-39 | 38% | NM_001007461.1 |
| <input type="checkbox"/> | Mus musculus gasdermin C-like 2 (Gsdmcl2), non-coding RNA | 133 | 133 | 46% | 2e-37 | 35% | NR_108053.1 |
| <input checked="" type="checkbox"/> | Homo sapiens gasdermin A (GSDMA), mRNA | 137 | 137 | 49% | 3e-37 | 35% | NM_178171.4 |
| <input checked="" type="checkbox"/> | Mus musculus gasdermin A2 (Gsdma2), mRNA | 132 | 132 | 45% | 5e-36 | 35% | NM_029727.2 |
| <input checked="" type="checkbox"/> | Homo sapiens gasdermin C (GSDMC), mRNA | 105 | 105 | 82% | 2e-26 | 26% | NM_031415.2 |
| <input type="checkbox"/> | Mus musculus gasdermin C-like 1 (Gsdmcl1), non-coding RNA | 97.4 | 97.4 | 32% | 9e-25 | 35% | NR_108051.1 |
| <input checked="" type="checkbox"/> | Rattus norvegicus gasdermin C (Gsdmc), mRNA | 64.3 | 64.3 | 62% | 1e-13 | 25% | NM_001134495.1 |
| <input checked="" type="checkbox"/> | Mus musculus deafness, autosomal dominant 5 (human) (Dfna5), mRNA | 57.4 | 57.4 | 45% | 2e-11 | 26% | NM_018769.3 |
| <input checked="" type="checkbox"/> | Mus musculus gasdermin C2 (Gsdmc2), transcript variant 2, mRNA | 55.8 | 55.8 | 50% | 6e-11 | 27% | NM_177912.4 |
| <input checked="" type="checkbox"/> | Mus musculus gasdermin C2 (Gsdmc2), transcript variant 1, mRNA | 55.8 | 55.8 | 50% | 6e-11 | 27% | NM_001168274.1 |
| <input checked="" type="checkbox"/> | Mus musculus gasdermin C3 (Gsdmc3), mRNA | 50.4 | 50.4 | 50% | 3e-09 | 26% | NM_183194.3 |
| <input checked="" type="checkbox"/> | Mus musculus gasdermin C (Gsdmc), mRNA | 49.7 | 49.7 | 49% | 5e-09 | 25% | NM_031378.3 |

建树分析一直系同源序列



建树分析—旁系同源序列（人源）



0.20

GSDM family (Uniprot)序列比对

| | | | | | | | | | | | | | |
|--------|-------------|-----|-------|----------|----------|---------|----------|---------|--------|--------|--------|-------|-------|
| P57764 | GSDMD_HUMAN | 1 | MGSAF | ERVVRRV | QELDHGGE | IPVTS | LQSSTG | FOPYCL | VVRKP | -SSSWF | -KPRYK | CVN | 58 |
| O60443 | DFNA5_HUMAN | 1 | --- | MFAKAT | RNFLRE | VADAD | GLIAV | SNLND | SDKLQ | LLSLV | TKKK | --RF | WCWQ |
| Q8TAX9 | GSDMB_HUMAN | 1 | MFSVF | EEITR | IVVKEM | DAGGDM | IAVRS | LVADR | FRCF | HLVGE | KR--- | TFF | -GCR |
| Q9BYG8 | GSDMC_HUMAN | 1 | MPSML | ERISK | NLVKE | IG-SK | DLPV | KYLLS | ATKLR | QFVIL | RKKK | DSR | SSF |
| Q96QA5 | GSDMA_HUMAN | 1 | -MTM | FENV | TRALAR | QLNPR | GDLT | PLDSL | LIDFK | RFPF | CLVLR | KR- | KSTL |
| Q0ZLH3 | PJVK_HUMAN | 1 | --- | MFAAAT | KSFVK | QVGDG | GRLV | VPVPS | LSEAD | KYQPL | SLVVK | KK-- | RCFL |
| | | | : | : | . | ... | : | : | * | . | : | :: | .* |
| P57764 | GSDMD_HUMAN | 59 | LSIKD | IIEP | DAEP- | DVQR | GR----- | SFHF | YDAM | DGQIQ | GSVEL | AAPQ | AKIAG |
| O60443 | DFNA5_HUMAN | 56 | LTLG | DVLI | IEDQ | FPSP | VVVES | DFVK | YEGK | FANHV | SGTL- | ETAL | GKVK |
| Q8TAX9 | GSDMB_HUMAN | 56 | LTLMD | IILD | TDG | GDKW | LDDEL | DGLQ | GQ---- | KAEF | QILD | NVD | STGE |
| Q9BYG8 | GSDMC_HUMAN | 60 | FSLND | IIEP | SSSVL | -ETV | VTG----- | PFHF | SDIM | IQKHK | ADM | GVNV | GIEV |
| Q96QA5 | GSDMA_HUMAN | 58 | YTLLD | VLEP | GSSPS | -DPTD | TG----- | NFGF | KNML | DTRVE | GDDV | --VP | KTVK |
| Q0ZLH3 | PJVK_HUMAN | 56 | FTLKD | IILG | DREIS | AGISS | YQLLN | YEDES | DSVSL | YGRRN | HIVN | DVGIN | VAGS |
| | | | :: | * | : | . | . | . | . | . | . | :: | : |
| P57764 | GSDMD_HUMAN | 110 | VSDSS | STSM | NVYSL | SDPNT | WQTLL | HERHL | RQPE | HKVL | QO-L | LRSG | DNVY |
| O60443 | DFNA5_HUMAN | 115 | FGTLR | KQE----- | VDLQ | QLIRD | SAERT | INL- | RNPV | LQOV | LEGR | NEVL | CVLT |
| Q8TAX9 | GSDMB_HUMAN | 112 | GFHHQ | KIKISE | --NRIS | -QQY | LATLE | NRKL | -REL | PF | SFR- | SINT | RENLY |
| Q9BYG8 | GSDMC_HUMAN | 111 | VDHGS | LEFQI | --VTI | PSNL- | EDFQ | KRKL | LDPE | PSLKE | -CRRR | GDNL | YVVTE |
| Q96QA5 | GSDMA_HUMAN | 107 | LSQNS | TLEV | QT--LS | VAPK | AL-ET | VQER | KLA- | ADHP | FLKE | -MQD | QGEN |
| Q0ZLH3 | PJVK_HUMAN | 116 | FGIVT | KHE----- | VEVST | LLKE | ITTR | KINF- | DHSL | IROQ | SRSS | RKAV | LCVM |
| | | | . | . | : | . | . | . | . | . | . | : | :: |
| P57764 | GSDMD_HUMAN | 169 | EVEV | TRTH | KRE-G | SGRF | SLPG | ATC---- | LQEG | QGHL | SQKKT | VTPSG | STLAF |
| O60443 | DFNA5_HUMAN | 167 | KCVI | SEHM | QVEEK | CGGIV | GIQT | KTQV | SATED | GNVT | KDSNV | VLEI | PAAT |
| Q8TAX9 | GSDMB_HUMAN | 167 | EETL | KSDR | ----- | QYK | FSQIS | ----- | QGHL | SYKH | KGQRE | VTI | PPNR |
| Q9BYG8 | GSDMC_HUMAN | 167 | NTVLY | DSSSV | N-ILG | KIAL | WITY | G--- | KGQ | QGES | LRVKK | KALT | LQKG |
| Q96QA5 | GSDMA_HUMAN | 162 | EVTLE | RAGK | AE-AC | FLP | FAPL | G--- | LQ--- | GS- | INH | KEAV | TIPK |
| Q0ZLH3 | PJVK_HUMAN | 168 | QCSL | SVHAG | IRGE | AM----- | RFHF | M-DE | QNP | KGRD | KAI | VFP | PAHT |
| | | | : | : | . | . | . | . | . | . | . | : | :: |
| P57764 | GSDMD_HUMAN | 224 | DSDL | DVLL | F-PDK | QRTF | QPPA | ----- | TGH--- | KRST | SEGAW | PLPS | GLS- |
| O60443 | DFNA5_HUMAN | 227 | KLDG | QFEF | CLLR | GKQG | GFEN | KKRID | SVYLD | PLV | REFAF | IDMP | DAHG |
| Q8TAX9 | GSDMB_HUMAN | 215 | PNKE | TMS | AG-LDI | ----- | ----- | ----- | ----- | HFRG | KTKS | FP | EGK |
| Q9BYG8 | GSDMC_HUMAN | 223 | KEKAI | -LIS | -DDDE | QRTF | QDEY | EISE | MVGY | ----- | CAAR | SEGL | LP |
| Q96QA5 | GSDMA_HUMAN | 213 | KGKDE | ----- | WDIP | H--- | I---- | CNDN | MQT | FP | ----- | ----- | ----- |
| Q0ZLH3 | PJVK_HUMAN | 217 | YLDG | AFDL | CVTS | SVSK | GGFER | EETAT | FALLY | RL-- | RNIL | FER- | ----- |
| | | | . | . | . | . | . | . | . | . | . | . | . |

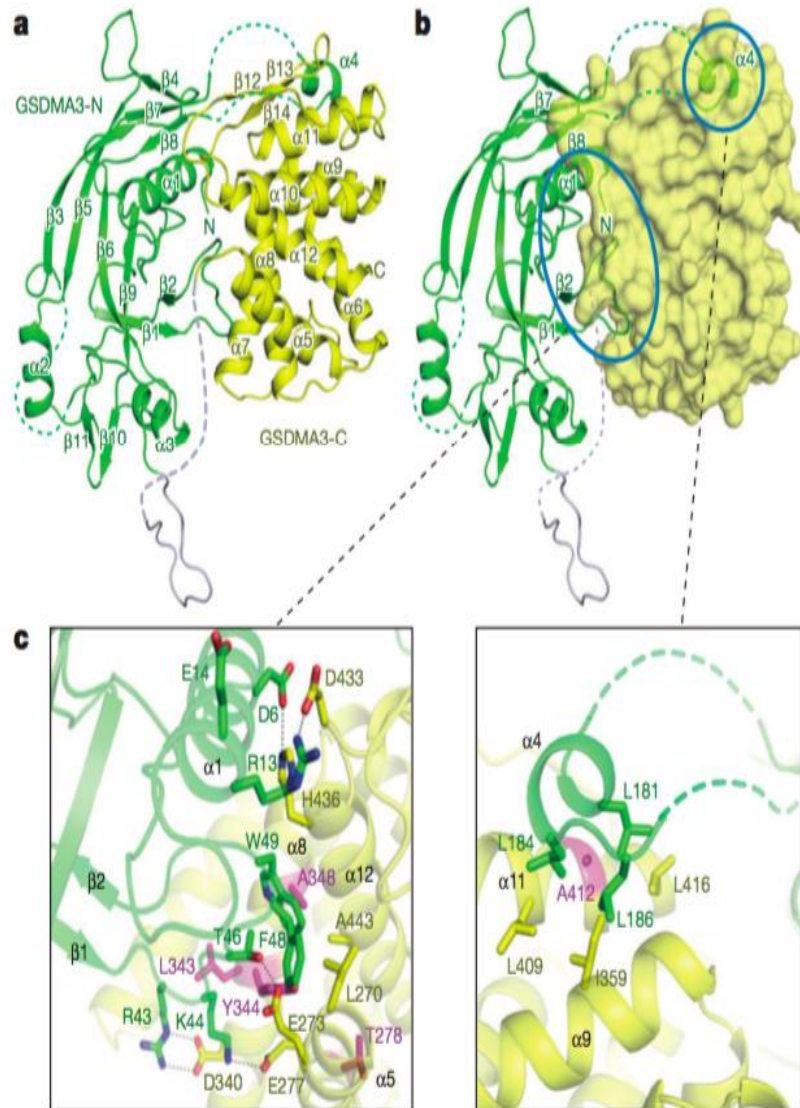
Conserved in N terminal

GSDM family (Uniprot)序列比对

| | | | | |
|-----------|-------------|-----|--------------------------------------------------------------|-----|
| P57764 | GSDMD_HUMAN | 265 | M-----MRCLHNFL-----TDGVPAEGAFTEDFQGLRAEVETIS----- | 298 |
| O60443 | DFNA5_HUMAN | 284 | VLKQATLLLERNF-----HPFAELPEPQQTALSDIFQAVLFD | 320 |
| Q8TAX9 | GSDMB_HUMAN | 242 | -----G-----SEDSRNMKEKLEDME----- | 257 |
| Q9BYG8 | GSDMC_HUMAN | 277 | MKLKPELFLTQQFLSGHLPKYEQV---HILPVGRIEFPWFQNFKHLQEEVFQKI----- | 327 |
| Q96QA5 | GSDMA_HUMAN | 234 | -----GEKSGEEKVILIQASDVGDVH---EGFRTLKEEVQRET----- | 268 |
| Q0ZLH3 | PJVK_HUMAN | 262 | VISRSQLYLDDLF-----SDYYDKPLSMT----DI----- | 287 |
| : | | | | |
| P57764 | GSDMD_HUMAN | 299 | KELELLDRELQQLLEGLEGV---LRDQAL--RALEEA-----LEQQQSLGPVEPLD | 346 |
| O60443 | DFNA5_HUMAN | 321 | DELLMVLEPVCDDLVSGLSPTVAVLGELKPRQQDLV-----AFLQLVGCSSLQGGCP | 372 |
| Q8TAX9 | GSDMB_HUMAN | 258 | SVLKDLTEEKRKDVLNSLAKC---LGKEDIR--QDLEQR-----VSE-VLISGELHME | 304 |
| Q9BYG8 | GSDMC_HUMAN | 328 | KTLAQLSKDVQDVMFYSILAM---LRDRGAL--QDLMM-----LE---LDSSGHLD | 371 |
| Q96QA5 | GSDMA_HUMAN | 269 | QQVEKLSRVGQSSILSSLSKL---LGKKKEL--QDI-----E---LALEGALD | 308 |
| Q0ZLH3 | PJVK_HUMAN | 288 | -----SLKEGTHIRVNLNHNIPKGPCILCGMGNFKRETVYGCFCQSVDG--- | 332 |
| : . * . * | | | | |
| P57764 | GSDMD_HUMAN | 347 | GPAGAVLECLVLSSGMLVPELAIPVVYLLGALTMLSETQHKLLAEALESQTLGLPPELVG | 406 |
| O60443 | DFNA5_HUMAN | 373 | GPEDAGSKQLFM-----TAYFLVSALAEMPDSAAALLGTCCCKLQIIPTLCHLLR | 421 |
| Q8TAX9 | GSDMB_HUMAN | 305 | DPDKPLLSSLFNAAGVLVEARAKAILDFLDALLESEEQQ-FVAEALEKGTPLPKDQVK | 363 |
| Q9BYG8 | GSDMC_HUMAN | 372 | GPGGAILKKLQODSNHAWFNPKDPILYLLEAIMVLSDFQHDLLACSMEKRIILQQQELVR | 431 |
| Q96QA5 | GSDMA_HUMAN | 309 | KGHEVTLEALPKDV-LLSKEAVGAILYFVGALTELSEAQQKLLVKSMEKKILPVQLKLV | 367 |
| Q0ZLH3 | PJVK_HUMAN | 333 | -----QKYVRL-----H-----AVPCFDIWHK | 349 |
| . : | | | | |
| P57764 | GSDMD_HUMAN | 407 | SLLEQSAPWQER-----STMSL-----PPGLLGNSWGEG-AP | 437 |
| O60443 | DFNA5_HUMAN | 422 | ALSDDGVSDLEDPTLTPLKDTERFGIVQRLFASADISLERLKSSVKAVILKDSKVFPLLL | 481 |
| Q8TAX9 | GSDMB_HUMAN | 364 | SVMEQNWDE----- | 372 |
| Q9BYG8 | GSDMC_HUMAN | 432 | SILEPNFRYPWS-----IPFTL-----KPELLAPLQSEGLAI | 463 |
| Q96QA5 | GSDMA_HUMAN | 368 | STMEQNFLLDKE-----GVFPL-----QPELLSSLGDEELTL | 399 |
| Q0ZLH3 | PJVK_HUMAN | 350 | RMK----- | 352 |
| P57764 | GSDMD_HUMAN | 438 | AWVLLDECGLGLEDTPHVCWEPQAQGRMCALYASLALLSGLSQEPH---- | 484 |
| O60443 | DFNA5_HUMAN | 482 | CITLNGLCALGREHS----- | 496 |
| Q8TAX9 | GSDMB_HUMAN | 373 | -----LASSPPDMDYDPEAR-ILCALYVVVVSILLELAEGPTSVSS | 411 |
| Q9BYG8 | GSDMC_HUMAN | 464 | TYGLLEECGLRMELDNPRSTWDVEAKMPLSALYGTLSSLQQLAEA----- | 508 |
| Q96QA5 | GSDMA_HUMAN | 400 | TEALVGLSGLEVQRSGPQYMWDPTLPRLCALYAGLSLLQQLTKAS----- | 445 |
| Q0ZLH3 | PJVK_HUMAN | 353 | ----- | 352 |

Un-conservative in C terminal

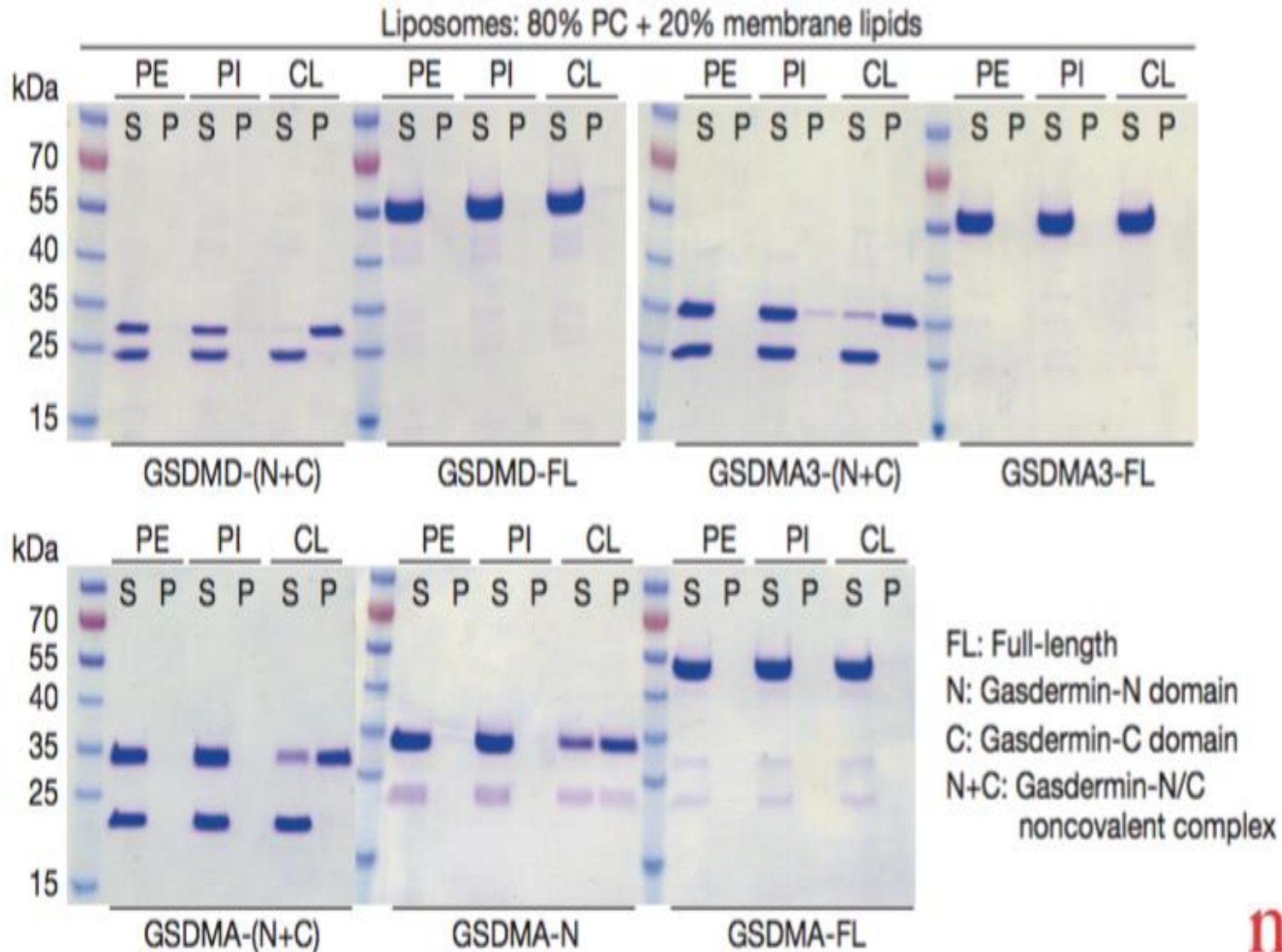
GSDMA3的晶体结构



nature

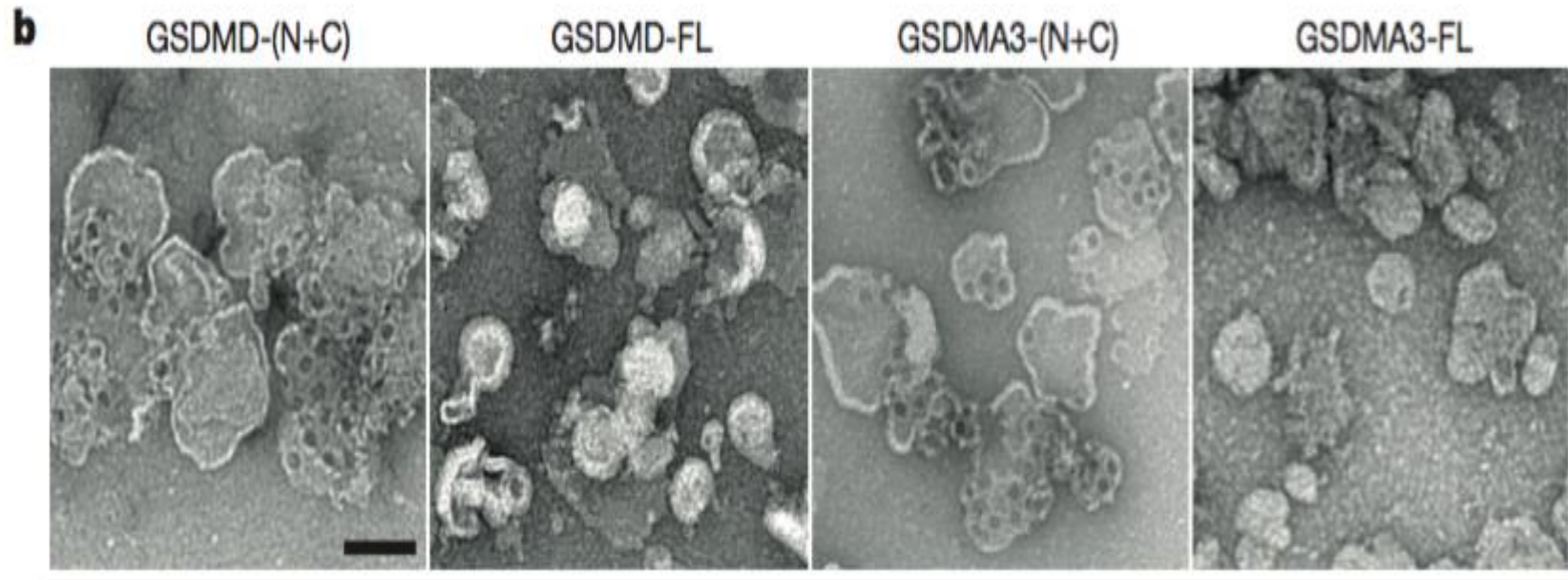
Gasdermin N端能够与质膜结合

b

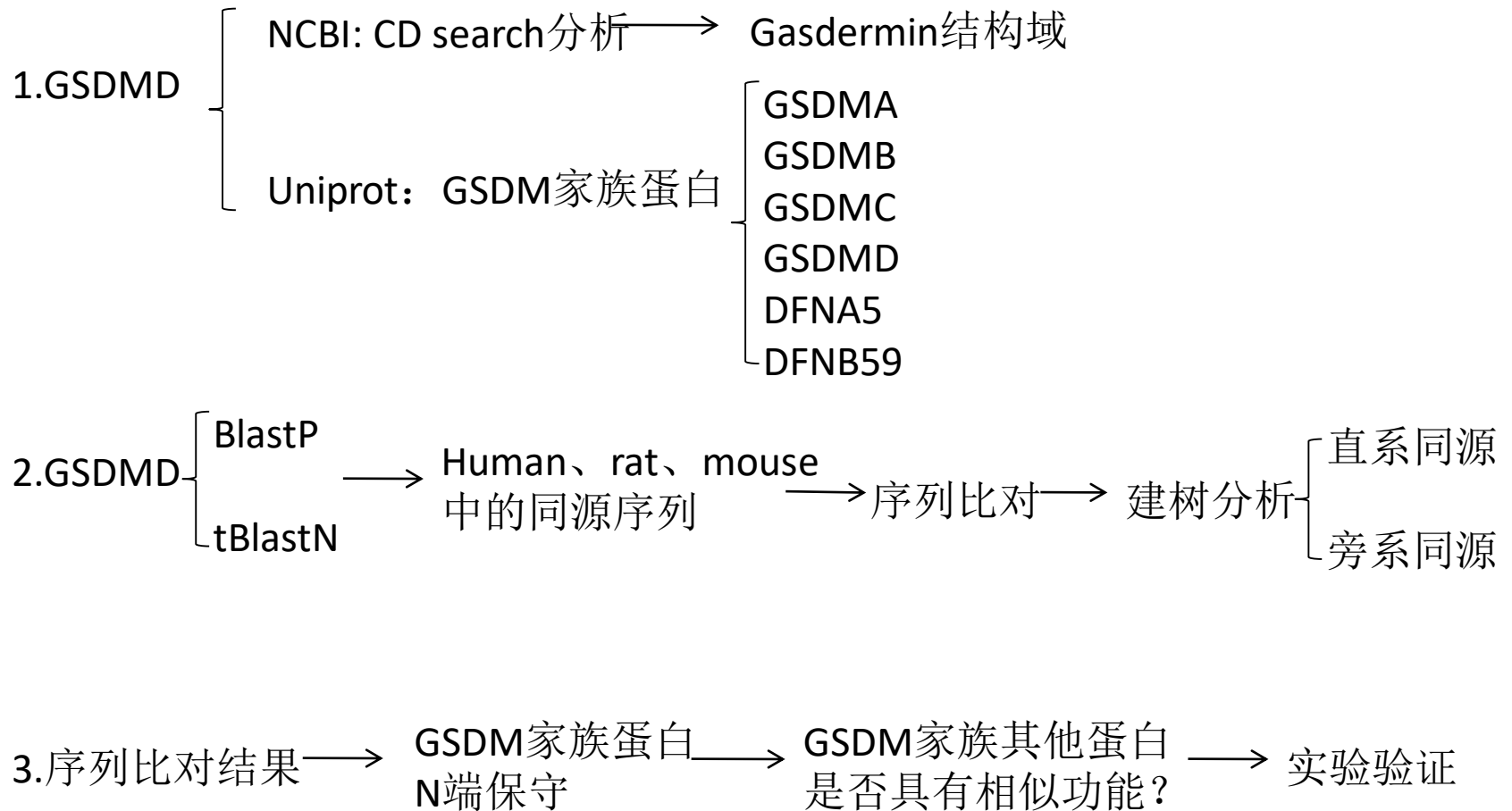


nature

Gasdermin N 端能够诱导质膜破裂



Summary :



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