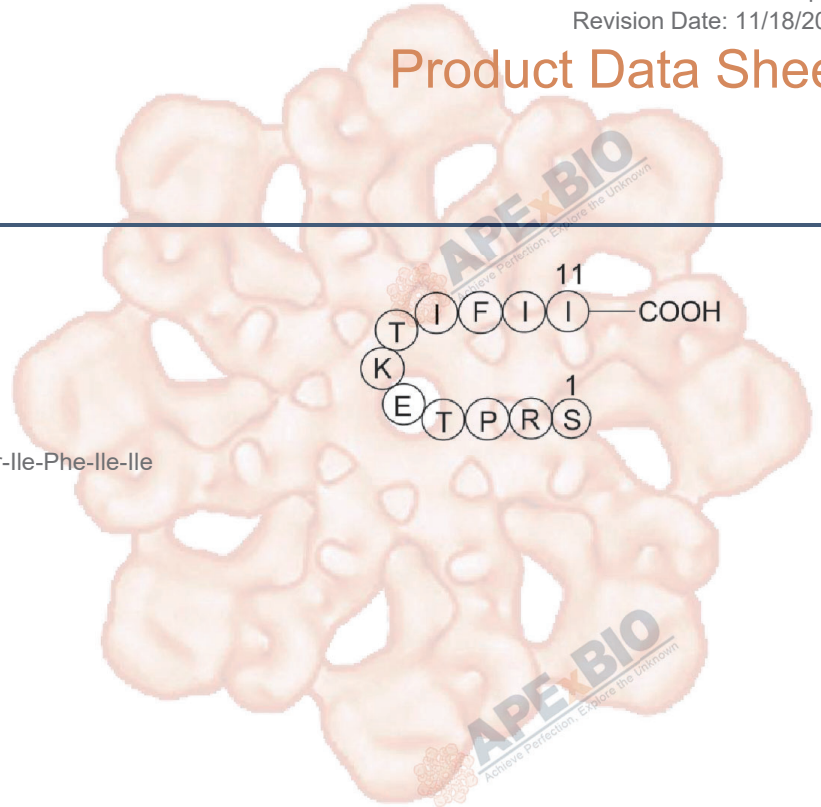


# Product Data Sheet

## Gap 27

|                  |   |
|------------------|---|
| <b>Cat. No.:</b> | A1045                                       |
| <b>CAS No.:</b>  | 198284-64-9                                 |
| <b>Formula:</b>  | C60H101N15O17                               |
| <b>M.Wt:</b>     | 1304.55                                     |
| <b>Synonyms:</b> | Ser-Arg-Pro-Thr-Glu-Lys-Thr-Ile-Phe-Ile-Ile |
| <b>Target:</b>   | Neuroscience                                |
| <b>Pathway:</b>  | Gap Junction                                |
| <b>Storage:</b>  | Desiccate at -20°C                          |



### Solvent & Solubility

insoluble in EtOH;  $\geq 5$  mg/mL in H<sub>2</sub>O;  $\geq 65.25$  mg/mL in DMSO

| In Vitro | Preparing Stock Solutions | Mass                  |           |           |           |
|----------|---------------------------|-----------------------|-----------|-----------|-----------|
|          |                           | Solvent Concentration | 1mg       | 5mg       | 10mg      |
|          |                           | <b>1 mM</b>           | 0.7665 mL | 3.8327 mL | 7.6655 mL |
|          |                           | <b>5 mM</b>           | 0.1533 mL | 0.7665 mL | 1.5331 mL |
|          |                           | <b>10 mM</b>          | 0.0767 mL | 0.3833 mL | 0.7665 mL |

Please refer to the solubility information to select the appropriate solvent

### Biological Activity

|                           |                                |   |
|---------------------------|--------------------------------|---|
| Shortsummary              | Selective gap junction blocker |   |
| IC <sub>50</sub> & Target |                                |   |
| In Vitro                  | <b>Cell Viability Assay</b>    |   |
|                           | Cell Line:                     | Rat osteoclasts   |
|                           | Preparation method:            | The solubility of this peptide in sterile water is >10 mM. Stock solution should be split and stored at -80°C for several months. |
|                           | Reacting conditions:           | 500 μM, 48 hours  |
|                           | Applications:                  | Heptanol-treated cells acted as positive controls for gap-junctional inhibition. A  |

|  |   |
|--|---|
|  | <p>significant decrease could be seen in the number of both TRAP-positive mononuclear and multinucleated cells with Gap 27 compared to controls. The numbers of TRAP-positive mononuclear and multinucleated cells with both treatments were very similar. After the 48-hour incubation, survival of osteoclasts was clearly reduced in the groups where gap-junctional communication was blocked either by heptanol or Gap 27.</p>   |
| In Vivo  | <p><b>Animal experiment</b></p>   |
|  | <p>Animal models: Female Sprague-Dawley rats</p>  |
|  | <p>Dosage form: 300 µM, 45 min</p>  |
|  | <p>Applications: The rats were prepared with closed cranial windows 24 h before the study. A 10-mm-diameter craniotomy was performed over the skull midline. The dura was removed carefully to keep the sagittal sinus intact. An 11-mm-diameter glass window outfitted with three ports was glued to the skull using cyanoacrylate. The skin overlying the window was sutured, and the animals were permitted to recover. On the day of study, three stainless steel screws were inserted into the skull, along the periphery of the cranial window, for electroencephalogram (EEG) recording. Cannulae were then connected to the three ports. The rats were subjected to one of two neuronal activation paradigms: SNS or bicuculline-induced seizure. Following the initial measurement of pial arteriolar diameter changes during SNS or during bicuculline exposure, baseline conditions were reestablished. After 20 min, a suffusion of gap-27 was initiated. Forty-five minutes later, the neural activation was repeated. Application of gap-27 peptide attenuated bicuculline-induced pial arteriolar dilation (by ~ 50%), without altering neuronal activation. A similar result was obtained with the SNS-associated pial arteriolar response, although the degree of reduction in the vasodilating response (~ 75%) was somewhat greater.</p> |
| <p>Other notes: Please test the solubility of all compounds indoor, and the actual solubility may slightly differ with the theoretical value. This is caused by an experimental system error and it is normal.</p> |   |

## Product Citations

- Ni X, Li XZ, et al. "Increased expression and functionality of the gap junction in peripheral blood lymphocytes is associated with hypertension-mediated inflammation in spontaneously hypertensive rats." *Cell Mol Biol Lett*. 2018 Aug 20;23:40. PMID:30151015
- HAI-CHAO ZHANG, ZHONG-SHUANG ZHANG, et al. "Connexin 43 in splenic lymphocytes is involved in the regulation of CD4+ CD25+ T lymphocyte proliferation and cytokine production in hypertensive inflammation." *INTERNATIONAL JOURNAL OF MOLECULAR MEDICINE*. 2017 October 20.
- Ni X, Wang A, et al. "Up-regulation of gap junction in peripheral blood T lymphocytes contributes to the inflammatory response in essential hypertension." *PLoS One*. 2017 Sep 14;12(9):e0184773. PMID:28910394

4.Koenen, Anna, et al. "Effects of renal denervation on renal pelvic contractions and connexin expression in rats." Acta Physiologica (2015).PMID:26436542

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## References

[1] Ilvesaro J, Tavi P, Tuukkanen J. Connexin-mimetic peptide Gap 27 decreases osteoclastic activity. BMC musculoskeletal disorders, 2001, 2(1): 10.

[2] Xu H L, Mao L, Ye S, et al. Astrocytes are a key conduit for upstream signaling of vasodilation during cerebral cortical neuronal activation in vivo. American Journal of Physiology-Heart and Circulatory Physiology, 2008, 294(2): H622-H632.

## Caution

**FOR RESEARCH PURPOSES ONLY.**

**NOT FOR HUMAN, VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.**

*Specific storage and handling information for each product is indicated on the product datasheet. Most APEX BIO products are stable under the recommended conditions. Products are sometimes shipped at a temperature that differs from the recommended storage temperature. Shortterm storage of many products are stable in the short-term at temperatures that differ from that required for long-term storage. We ensure that the product is shipped under conditions that will maintain the quality of the reagents. Upon receipt of the product, follow the storage recommendations on the product data sheet.*

**APEX BIO Technology**

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