

产品名称：**SAG**
产品别名：**SAG**

生物活性：				
Description	SAG is a potent Smo receptor agonist which activates the Hedgehog signaling pathway with a K_d of 59 nM.			
IC ₅₀ & Target	Kd: 59 nM (Smo)[1]			
In Vitro	SAG acts downstream of Ptch1 in the Hh pathway and counteracts cyclopamine inhibition of Smo. SAG induces firefly luciferase expression in Shh-LIGHT2 cells with an EC ₅₀ of 3 nM and then inhibits expression at higher concentrations. In Smo-expressing Cos-1 cells, SAG yields an apparent dissociation constant (K_D) of 59 nM for the SAG/Smo complex[1]. SAG and purmorphamine override the inhibitory effect of robotnikinin since Smo functions downstream of Shh/Ptc1[2]			
In Vivo	In CD-1 mice, SAG (1.0 mM) or NELL-1 (600 µg/ml) alone results in increased bone formation at 4 and 8 weeks, but significantly greater bone formation with both components combined (SAG + NELL-1). The combination of the two compounds exhibits a significant increase in new bone formation, accompanied by increased defect vascularization[3]. SAG (15, 17, or 20 mg/kg, i.p.) induces pre-axial polydactyly prevalently. The highest SAG dose is effective in ca. 80% of the embryos and increased Gli1 and Gli2 mRNA expression in the limb bud, with Gli1 mRNA being the most upregulated[4].			
Solvent&Solubility	In Vitro: DMSO : ≥ 38 mg/mL (77.54 mM) * "≥" means soluble, but saturation unknown.			
	Preparing Stock Solutions	<div>Solvent / Mass / Concentration</div>	1 mg	5 mg
		1 mM	2.0406 mL	10.2028 mL
		5 mM	0.4081 mL	2.0406 mL
		10 mM	0.2041 mL	1.0203 mL
	*请根据产品在不同溶剂中的溶解度选择合适的溶剂配制储备液。一旦配成溶液，请分装保存，避免反复冻融造成的产品失效。 储备液的保存方式和期限：-80℃，6 months；-20℃，1 month。-80℃ 储存时，请在 6 个月内使用，-20℃ 储存时，请在 1 个月内使用。 In Vivo: 请根据您的实验动物和给药方式选择适当的溶解方案。以下溶解方案都请先按照 In Vitro 方式配制澄清的储备液，再依次添加助溶剂： ——为保证实验结果的可靠性，澄清的储备液可以根据储存条件，适当保存；体内实验的工作液，建议您现用现配，当天使用； 以下溶剂前显示的百分比是指该溶剂在您配制终溶液中的体积占比；如在配制过程中出现沉淀、析出现象，可以通过加热和/或超声的方式助溶			
	1.请依序添加每种溶剂： 10% DMSO→40% PEG300 →5% Tween-80 → 45% saline Solubility: ≥ 10 mg/mL (20.41 mM); Clear solution 此方案可获得 ≥ 10 mg/mL (20.41 mM, 饱和度未知) 的澄清溶液。 以 1 mL 工作液为例，取 100 µL 100.0 mg/mL 的澄清 DMSO 储备液加到 400 µL PEG300 中，混合均匀 向上述体系中加入 50 µL Tween-80，混合均匀；然后继续加入 450 µL 生理盐水定容至 1 mL。			
	2.请依序添加每种溶剂： 10% DMSO→ 90% (20% SBE-β-CD in saline) Solubility: ≥ 10 mg/mL (20.41 mM); Clear solution 此方案可获得 ≥ 10 mg/mL (20.41 mM, 饱和度未知) 的澄清溶液。			

	<p>以 1 mL 工作液为例，取 100 μL 100.0 mg/mL 的澄清 DMSO 储备液加到 900 μL 20% 的 SBE-β-CD 生理盐水溶液中，混合均匀。</p> <p>3.请依序添加每种溶剂： 10% DMSO \rightarrow90% corn oil</p> <p>Solubility: \geq 10 mg/mL (20.41 mM); Clear solution</p> <p>此方案可获得 \geq 10 mg/mL (20.41 mM, 饱和度未知) 的澄清溶液，此方案不适用于实验周期在半个月以上的实验。</p> <p>以 1 mL 工作液为例，取 100 μL 100.0 mg/mL 的澄清 DMSO 储备液加到 900 μL 玉米油中，混合均匀。</p>
References	<p>[1]. Chen JK, et al. Small molecule modulation of Smoothened activity. <i>Proc Natl Acad Sci U S A</i>. 2002 Oct 29;99(22):14071-6.</p> <p>[2]. Stanton BZ, et al. A small molecule that binds Hedgehog and blocks its signaling in human cells. <i>Nat Chem Biol</i>. 2009 Mar;5(3):154-6.</p> <p>[3]. Lee S, et al. Combining Smoothened Agonist (SAG) and NEL-like protein-1 (NELL-1) Enhances Bone Healing. <i>Plast Reconstr Surg</i>. 2017 Feb 13</p> <p>[4]. Fish EW, et al. Preaxial polydactyly following early gestational exposure to the smoothened agonist, SAG, in C57BL/6J mice. <i>Birth Defects Res A Clin Mol Teratol</i>. 2016 Nov 1</p>
实验参考：	
Animal Administration	<p>GD 9:6 hr females are weighed, given a single intraperitoneal SAG injection (6, 6, and 7 for the 15, 17, and 20 mg/kg doses, respectively) or vehicle (lactated Ringer's solution; 9 litters), and returned to their home cage. GD 9:6 is a sensitive period for inducing forelimb malformations by retinoic acid and ethanol administration. For SAG dose-response studies, GD 15 embryos are collected, examined for the number and appearance of the digits on each limb. For whole-mount in situ hybridization studies, embryos are collected at GD 9:10 hr in ice-cold RNase-free phosphate-buffered saline (PBS), fixed in 4% paraformaldehyde, rinsed with PBS, dehydrated in methanol and stored at -20°C. [4]</p>
References	<p>[1]. Chen JK, et al. Small molecule modulation of Smoothened activity. <i>Proc Natl Acad Sci U S A</i>. 2002 Oct 29;99(22):14071-6.</p> <p>[2]. Stanton BZ, et al. A small molecule that binds Hedgehog and blocks its signaling in human cells. <i>Nat Chem Biol</i>. 2009 Mar;5(3):154-6.</p> <p>[3]. Lee S, et al. Combining Smoothened Agonist (SAG) and NEL-like protein-1 (NELL-1) Enhances Bone Healing. <i>Plast Reconstr Surg</i>. 2017 Feb 13</p> <p>[4]. Fish EW, et al. Preaxial polydactyly following early gestational exposure to the smoothened agonist, SAG, in C57BL/6J mice. <i>Birth Defects Res A Clin Mol Teratol</i>. 2016 Nov 1</p>