



**Supplemental Figure 1:** Construction of IgG4 only antibody phage display libraries. IgG4 scFv includes part of the IgG4 H chain constant region and the m.w. of IgG4 scFv (marked by solid lines) is approximately 8kD more than traditional scFv (marked by dotted lines).

**Supplemental Table I: Panning strategy to isolated Dsg1-specific, LJM11-specific, and cross-reactive IgG4 monoclonal antibodies**

	Panning antigen		
	Dsg1-specific	LJM11-specific	Cross-reactive
<b>1<sup>st</sup> Panning</b>	<b>Dsg1</b>	<b>LJM11</b>	<b>Dsg1</b>
<b>2<sup>nd</sup> panning</b>	<b>Dsg1</b>	<b>LJM11</b>	<b>LJM11</b>
<b>3<sup>rd</sup> panning</b>	<b>Dsg1</b>	<b>LJM11</b>	<b>Dsg1</b>
<b>4<sup>th</sup> panning</b>	<b>-</b>	<b>-</b>	<b>LJM11</b>