

Datasheet: 2222-8004

**BATCH NUMBER 155020**

<b>Description:</b>	MOUSE ANTI HUMAN C4d
<b>Specificity:</b>	C4d
<b>Other names:</b>	COMPLEMENT COMPONENT 4d
<b>Format:</b>	Purified
<b>Product Type:</b>	Monoclonal Antibody
<b>Clone:</b>	10-11
<b>Isotype:</b>	IgG1
<b>Quantity:</b>	0.1 mg

## Product Details

### Applications

This product has been reported to work in the following applications. This information is derived from testing within our laboratories, peer-reviewed publications or personal communications from the originators. Please refer to references indicated for further information. For general protocol recommendations, please visit [www.bio-rad-antibodies.com/protocols](http://www.bio-rad-antibodies.com/protocols).

	Yes	No	Not Determined	Suggested Dilution
Immunohistology - Frozen	▪			1/100 - 1/750
Immunohistology - Paraffin (1)	▪			
ELISA	▪			1/5000 - 1/20000
Western Blotting	▪			
Immunofluorescence	▪			1/250 - 1/600

Where this product has not been tested for use in a particular technique this does not necessarily exclude its use in such procedures. Suggested working dilutions are given as a guide only. It is recommended that the user titrates the product for use in their own system using the appropriate negative/positive controls.

**(1)It has been reported that this antibody works very well on acetone-fixed, frozen renal biopsies. Strong staining is observed in the glomeruli and in some cases the peritubular capillaries.**

**Clone 10-11 has given variable results on formalin-fixed, paraffin-embedded sections. It has been observed that pre-treatment with 88% formic acid for 20 minutes at room temperature is beneficial (6).**

**For best results Bio-Rad recommend HISTAR detection kits ([STAR3000A/B/C](#)).**

<b>Target Species</b>	Human
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<b>Species Cross Reactivity</b>	Does not react with: Mouse, Dog, Bovine, Cat, Rabbit, Rat, Guinea Pig, Sheep
<b>Product Form</b>	Purified IgG - liquid
<b>Preparation</b>	Purified IgG prepared by Fast protein liquid chromatography (FPLC)
<b>Buffer Solution</b>	Borate buffered saline
<b>Preservative Stabilisers</b>	0.09% Sodium Azide (NaN <sub>3</sub> )
<b>Approx. Protein Concentrations</b>	IgG concentration 1.0 mg/ml
<b>Immunogen</b>	Native, from human plasma
<b>External Database Links</b>	<p><b>UniProt:</b></p> <p><a href="#">P0C0L4</a>    <a href="#">Related reagents</a></p> <p><a href="#">P0C0L5</a>    <a href="#">Related reagents</a></p> <p><b>Entrez Gene:</b></p> <p><a href="#">720</a> C4A    <a href="#">Related reagents</a></p> <p><a href="#">721</a> C4B    <a href="#">Related reagents</a></p>
<b>Synonyms</b>	CO4, CPAMD2, CPAMD3
<b>RRID</b>	AB_620117
<b>Specificity</b>	<p><b>Mouse anti Human C4d antibody, clone 10-11</b> recognizes the secreted protein complement component 4d (C4d). The presence of C4d in renal peritubular capillaries is a key indicator for acute antibody-mediated rejection [AMR] (<a href="#">Collins et al. 1999.</a>).</p> <p>C4d was accepted in 2003 into the Banff classification for identification of acute AMR (<a href="#">Racusen et al. 2003</a>). Mouse anti Human C4d antibody, clone 10-11 is specific for C4d, a marker that can be used in the detection of acute AMR for kidney, heart, pancreas and lung allografts. C4d is regarded as a key marker of antibody-mediated cell injury and humoral rejection (<a href="#">Sacks and Chowdhury 2002</a>).</p> <p>Complement 1 complex cleaves complement 4 (C4) to form C4b and C4a. C4b levels are strictly regulated. Single site cleavage of the C4b's alpha chain by Factor I forms iC4b and blocks C3 convertase, inhibiting opsonization and activation of the classical pathway. This requires C4 binding protein or CR1 as a cofactor. iC4b is further degraded into C4d and C4c. C4b's short half life means that C4d is present in serum at high enough concentrations to make it a useful marker for classical complement activation (<a href="#">Collins et al. 1999</a>).</p> <p>Mouse anti Human C4d antibody, clone 10-11 is used to detect the biomarker C4d which</p>

has been described as a “footprint” of antibody mediated tissue rejection ([Sacks and Chowdhury 2002](#)). The internal thioester of C4b becomes exposed during cleavage to C4d and forms a covalent bond with the cell surface. The longer half-life of covalently bound C4d makes it a footprint of complement activation long after weakly bound antibodies have been cleared by the blood stream ([Sacks and Chowdhury 2002](#)).

C4 has also been linked to susceptibility to systemic lupus erythematosus ([Yang et al. 2004](#)) and rheumatoid arthritis ([Makinde et al. 1989](#)).

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## References

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2. Collins, A.B. *et al.* (1999) Complement activation in acute humoral renal allograft rejection: diagnostic significance of C4d deposits in peritubular capillaries. [J Am Soc Nephrol. 10 \(10\): 2208-14.](#)
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7. Rowe, P. *et al.* (2013) Increased complement activation in human type 1 diabetes pancreata. [Diabetes Care. 36 \(11\): 3815-7.](#)
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10. Verghese, P.S. *et al.* (2016) The clinical implications of the unique glomerular complement deposition pattern in transplant glomerulopathy. [J Nephrol. Nov 15. \[Epub ahead of print\]](#)
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13. Dugum, M. *et al.* (2014) Re-examination of sinusoidal deposition of complement 4d in liver allografts: experience from a single institution. [Int J Clin Exp Pathol. 7 \(2\): 784-91.](#)
14. Sánchez-escuredo, A. *et al.* (2016) Borderline rejection in ABO-incompatible kidney transplantation. [Clin Transplant. 30 \(8\): 872-9.](#)
15. Lattenist, L. *et al.* (2013) Renal and urinary levels of endothelial protein C receptor correlate with acute renal allograft rejection. [PLoS One. 8 \(5\): e64994.](#)
16. Verghese, P. *et al.* (2013) The impact of C4d and microvascular inflammation before we knew them. [Clin Transplant. 27 \(3\): 388-96.](#)

- Further Reading**
1. Stoltzner, S.E. *et al.* (2000) Temporal accrual of complement proteins in amyloid plaques in Down's syndrome with Alzheimer's disease. [Am J Pathol. 156 \(2\): 489-99.](#)
  2. Sacks, S.H. & Chowdhury, P. (2002) Footprints of humoral rejection. [Curr Opin Nephrol Hypertens. 11 \(6\): 627-8.](#)
  3. Racusen, L.C. *et al.* (2003) Antibody-mediated rejection criteria - an addition to the Banff 97 classification of renal allograft rejection. [Am J Transplant. 3 \(6\): 708-14.](#)
  4. Yang, Y. *et al.* (2004) The intricate role of complement component C4 in human systemic lupus erythematosus. [Curr Dir Autoimmun. 7: 98-132.](#)
  5. Makinde, V.A. *et al.* (1989) Reflection of disease activity in rheumatoid arthritis by indices of activation of the classical complement pathway. [Ann Rheum Dis. 48 \(4\): 302-6.](#)

**Storage** Store at +4°C or at -20°C if preferred.  
 Storage in frost-free freezers is not recommended.  
 This product should be stored undiluted.  
 Avoid repeated freezing and thawing as this may denature the antibody.  
 Should this product contain a precipitate we recommend microcentrifugation before use.

**Guarantee** 12 months from date of despatch

**Health And Safety Information** Material Safety Datasheet documentation #10077 available at:  
<https://www.bio-rad-antibodies.com/SDS/2222-8004>  
 10077

**Regulatory** For research purposes only

## Related Products

### Recommended Secondary Antibodies

Rabbit Anti Mouse IgG (STAR12...)	<a href="#">RPE</a>
Goat Anti Mouse IgG IgA IgM (STAR87...)	<a href="#">HRP</a>
Goat Anti Mouse IgG (STAR76...)	<a href="#">RPE</a>
Goat Anti Mouse IgG (STAR70...)	<a href="#">FITC</a>
Goat Anti Mouse IgG (H/L) (STAR117...)	<a href="#">Alk. Phos.</a> , <a href="#">DyLight®488</a> , <a href="#">DyLight®550</a> , <a href="#">DyLight®650</a> , <a href="#">DyLight®680</a> , <a href="#">DyLight®800</a> , <a href="#">FITC</a> , <a href="#">HRP</a>
Rabbit Anti Mouse IgG (STAR13...)	<a href="#">HRP</a>
Goat Anti Mouse IgG (Fc) (STAR120...)	<a href="#">FITC</a> , <a href="#">HRP</a>
Rabbit Anti Mouse IgG (STAR9...)	<a href="#">FITC</a>
Goat Anti Mouse IgG (STAR77...)	<a href="#">HRP</a>

<b>North &amp; South America</b>	Tel: +1 800 265 7376 Fax: +1 919 878 3751 Email: <a href="mailto:antibody_sales_us@bio-rad.com">antibody_sales_us@bio-rad.com</a>	<b>Worldwide</b>	Tel: +44 (0)1865 852 700 Fax: +44 (0)1865 852 739 Email: <a href="mailto:antibody_sales_uk@bio-rad.com">antibody_sales_uk@bio-rad.com</a>	<b>Europe</b>	Tel: +49 (0) 89 8090 95 21 Fax: +49 (0) 89 8090 95 50 Email: <a href="mailto:antibody_sales_de@bio-rad.com">antibody_sales_de@bio-rad.com</a>
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Printed on 29 Aug 2024

