

Product number **A014**  
 Revision number **RN4.1**

**Product Name** Polyclonal antibody to human tissue transglutaminase (TG2)  
**Host** Rabbit  
**Immunogen** Human tissue transglutaminase (full length protein with N-terminal hexahistidin-tag) recombinantly produced in insect cells  
**Amount** 200 µg IgG (Protein A purified)  
**Formulation** The antibody is lyophilized from PBS, 2 mg/mL human serum albumin, azide free.  
**Specificity** Specificity of A014 was determined with human transglutaminases (TG1 – TG7, FXIII) and TG2 of different species.

**Cross-reactivity of A014 to other rec. human transglutaminases**

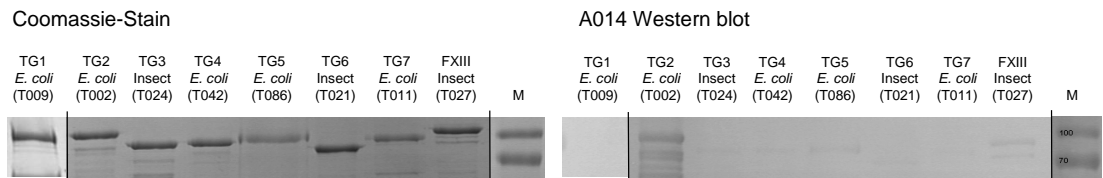


Figure 1: Equal amounts of human transglutaminases (TG1 – TG7, FXIII) were analysed by SDS-PAGE-Gel (staining with coomassie brilliant blue, left) and western blot (right, A014 diluted 1:2,000 in TBST; 2<sup>nd</sup> AB: Anti-Rabbit IgG - Alkaline Phosphatase antibody diluted 1:10,000 in TBST).  
 The western blot reveals that A014 has no cross reactivity to TG1, TG6 and TG7 and very slight cross reactivity to TG3, TG4, TG5 and FXIII.

**Cross-reactivity of A014 to rec. TG2 from various species**

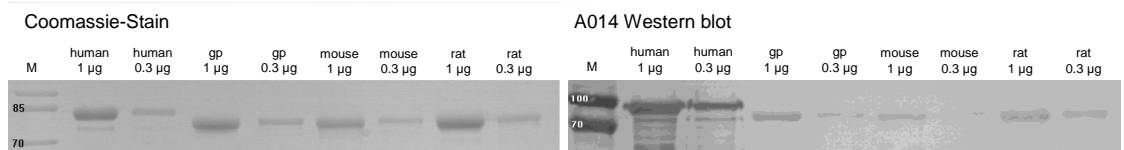


Figure 2: Equal amounts (1 µg and 0.3 µg protein per lane respectively) of transglutaminase 2 from various species (human, guinea pig (gp), rat and mouse) were analysed by SDS-PAGE-Gel (staining with coomassie brilliant blue, left) and western blot (right, A014 diluted 1:2,000 in TBST; 2<sup>nd</sup> AB: Anti-Rabbit IgG - Alkaline Phosphatase antibody diluted 1:10,000 in TBST).  
 The western blot shows that A014 also recognizes TG2 from various species, although at a lower signal intensity. Note: A014 also detects dog TG2.

**Application** Western-Blotting, immuno-fluorescence, immuno-histochemistry  
 Note: For FACS antibody A028 (FITC-labeled A014) is recommended.

**Working dilutions** Optimal dilutions should be determined by the end user.  
 For Western-Blotting: 1 / 500 to 1 / 5,000 should be suitable  
 For immuno-fluorescence and immuno-histochemistry 1 / 100 to 1 / 500 is recommended.

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**Background info**

Tissue transglutaminase is a, Ca<sup>2+</sup>-dependent enzyme (78 kDa) composed by 4 domains: Beta Sheet Domain (fibronectin binding, ~17 kDa), catalytic Core Domain (Cys-His-Asp catalytic triad, Calcium-binding, GTP/GDP-binding, ~37 kDa), Beta Barrel 1 Domain (GTP/GDP-binding, ~14 kDa) and Beta Barrel 2 Domain (~12 kDa). The inactive GTP-bound enzyme is present in a closed conformation, which upon activation by Ca<sup>2+</sup> and substrate binding opens like a pocket knife resulting in a longitudinal open conformation (see figure).

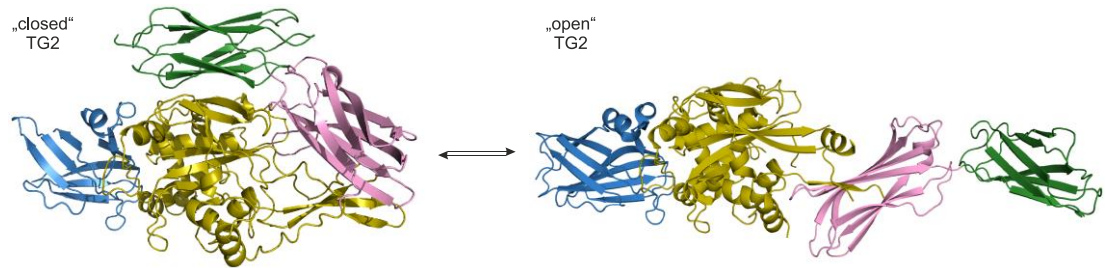


Figure 4: closed (left) and open (right) conformation of human tissue transglutaminase

Blue: Beta Sheet Domain  
 Yellow: catalytic Core Domain  
 Pink: Beta Barrel 1 Domain  
 Green: Beta Barrel 2 Domain

**Epitopes**

The epitopes the polyclonal antibody to human TG2 (A014) binds to were determined using PEPperCHIP® Transglutaminase Microarray (P111).

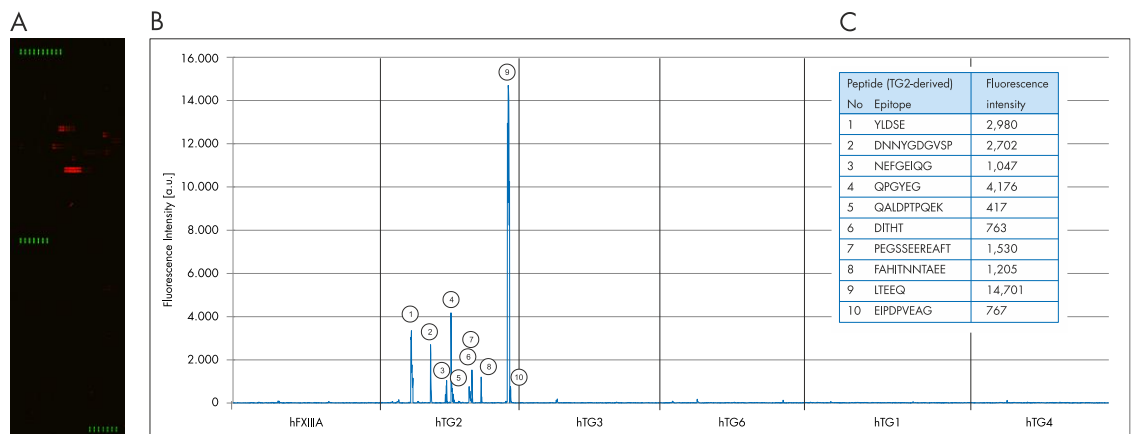


Figure 3: A) PEPperCHIP® Transglutaminase Peptide Microarray after incubation with mab A014 (10 µg/mL) and secondary anti-mouse IgG-antibody (DyLight680; red). Control: monoclonal anti-HA-antibody-DyLight800; green). B) Fluorescence intensity plots for the whole microarray. C) Fluorescence intensity of the respective epitopes.

A014 recognizes the epitopes

**Y<sup>149</sup>LDSE<sup>153</sup>**, **D<sup>242</sup>NNYGDGVSP<sup>251</sup>**, **N<sup>318</sup>EFGEIQG<sup>325</sup>**, **Q<sup>348</sup>PGYEG<sup>353</sup>**, **Q<sup>355</sup>ALDPTPQEK<sup>364</sup>**, **D<sup>438</sup>IHTHT<sup>442</sup>**, **P<sup>446</sup>EGSSEEREAFT<sup>457</sup>**, **F<sup>492</sup>AHITNNTAEE<sup>502</sup>**, **L<sup>629</sup>TEEQ<sup>633</sup>**, **E<sup>637</sup>IPDPVEAG<sup>645</sup>**

The colour code defines the TG2-domain (see background info above).

In the TG2-sequence on the next page the epitopes are underlined.

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TG2 sequence deduced from TGM2 allele IMAGp958L121020 (colours indicate TG2-domain according to background info on previous page):

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MAEELVLERCDLELETNGRDHHTADLCREKLVVRRGQPFWLTLLHFEGRNYEASVDSLTFSS 60
VVTGPAPSQEAGTKARFPLRDAVEEGDWTATVVDQDCTLSLQLTTPANAPIGLYRLSLE 120
ASTGYQGSSFVLGHFILLFNAWCPADAVYLDSEEERQEYVLTQQGFIYQGSAKFIKNIPW 180
NFGQFEDGILDICLILLDVNPKFLKNAGRDCSRRSSPVYVGRVVS GMVNCNDDQGVLLGR 240
WDNNYGDGVSPMSWIGSVDILRRWKNHGCQRVKYQGCWVFAAVACTVLRCLGIPTRVVTN 300
YNSAHDQNSNLLIEYFRNEFGEIQGDKSEMIWNFHCWVESWMTTRPDLQPGYEGWQALDPT 360
POEKSEGTYCCGPVPVRAIKEGDLSTKYDAPFVFAEVNADVVDWIQQDDGSVHKSINRSL 420
IVGLKISTKSVGRDEREDITHTYKYPEGSSEEREAFTTRANHLNKLAEKEETGMAMRIRVG 480
QSMNMGSDFDVFAHITNNTAEEYVCRLLLCARTVSYNGILGPECGTKYLLNLNLEPFSEK 540
SVPLCILYEKYRDCLTESNLIKVRALLVEPVINSYLLAERDLYLENPEIKIRILGEPKQK 600
RKLVAEVS LQNPLPVALEGCTFTVEGAGLLTEEQKTVEIPDPVEAGEEVKVRMDLLPLHMG 660
LHKLVVNFESDKLKAVKGFNRVNIIGPA 687
    
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A014 - epitopes in the above sequence are underlined and written in bold.

## Example

Immuno-fluorescence of mouse small intestinal cryo-section

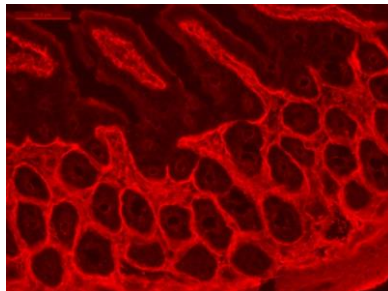


Figure 3: For detection of tissue transglutaminase mouse small intestinal cryo-sections were incubated with A014 (dilution 1:100) and detected with goat-antirabbit-IgG-Cy3-conjugate.  
Magnification: 1:400

## Storage

Stable for a minimum of 5 years at  $-80^{\circ}\text{C}$  as lyophilized powder.

***Delivery is possible at ambient temperature***

## Reference(s)

Dulay et al., Biosens. Bioelectron. 2011, 26:3852-6

## Related products

A033 Monoclonal antibody to tissue transglutaminase (TG2, Core Domain)  
A028 FITC-labelled polyclonal antibody to TG2  
A053 Biotinylated polyclonal antibody to human tissue transglutaminase (hTG2)  
T002 Human tissue transglutaminase  
P111 PEPperCHIP® Transglutaminase Microarray

## Release date

27 May 2024

## NOTE

INTENDED FOR RESEARCH USE ONLY, NOT FOR USE IN HUMAN, THERAPEUTIC OR DIAGNOSTIC APPLICATIONS.