



## Bi-Test™ CD4 FITC - CD28 PE

**Product:** Anti-human CD4 FITC Helper/Inducer T cell Monoclonal I Antibody and anti-human CD28 receptor monoclonal antibody.

**Description:** Identification of CD4 on human helper/inducer T cells expressing the 60,000 M.W. surface antigen (HLA class II reactive). CD4 is present in low density on monocytes. Anti-human CD28 binds the 44kDa MW cell surface protein on the surface of most T cells. CD28 acts as the ligand for the B7/BB-1 molecule on the surface of activated B cells. B7/BB-1 co-stimulates T cells through CD28, along with CD2 and CD3. CD28 antigen is a disulfide-linked homodimeric glycoprotein. The CD28 antigen is present on approximately 60%-80% of lymphocytes (95% of CD4 and 50% of CD8 lymphocytes). CD28 regulates the expression of cytokines by T cells, not only IL-2, but also IL-1 alpha and CSF-1, usually synthesized by accessory cells. CD28 functions as a cell adhesion molecule (CAM) for certain T cell subsets.

**Isotype:** Mouse IgG1 kappa (FITC) and Mouse IgG1 kappa (PE)

**Clones:** 7E14 (CD4 FITC) and B23 (CD28 PE)

**Applications:** Monitoring of T cells subsets in peripheral blood; Analysis of T cell subsets involved in helper/inducer functions; Characterization of subtypes of T cell leukemia's and lymphomas; Studies of AIDS/HIV virus infection; Analysis of NK subsets; Study of cell mediated cytotoxicity; Study of T lymphocyte cytokine function; Study of B cell activation; Study of Cell-adhesion molecules relating T & B lymphocytes.

**Use:** PBMC: Add 10  $\mu$ l of MAB/10<sup>6</sup> PBMC in 100  $\mu$ l PBS. Mix gently and incubate for 15 minutes at 2<sup>0</sup> to 8<sup>0</sup>C. Wash twice with PBS and analyze or fix with 0.5% v/v of paraformaldehyde in PBS and analyze.

WHOLE BLOOD: Add 10  $\mu$ l of MAB/100  $\mu$ l of whole blood. Mix gently and incubate for 15 minutes at room temperature 20<sup>0</sup>C. Lyse the whole blood. Wash once with PBS and analyze or fix with 0.5% v/v of paraformaldehyde in PBS and analyze. See instrument manufacturer's instructions for Lysed Whole Blood and Immunofluorescence analysis with a flow cytometer or microscope.

**Storage:** Antibodies are supplied in PBS, 0.08% sodium azide and 0.2% protein carrier for FITC and PE. Antibodies should be stored at 4-8<sup>0</sup>C. Monoclonal antibodies should not be frozen. Reagents are stable for the period shown on the vial label when stored properly.

Ordering Information:	Form	Vial Size	Catalog #
	Bi-Test™	50 Test	0428s
	Bi-Test™	100 Test	0428

**For research use only. Not for use in human diagnostics or therapeutics.**

## REFERENCES:

1. Thymus Dependent Membrane Antigens in Man: Inhibition of Cell-Mediated Lympholysis by Monoclonal Antibodies to the TH-2 Antigen. Evans, R.L., Wall, D.W., Platsoucas, C.D., Siegal, F.P., Fikrig, S.M., Testa, C.M, and Good, R.A. Proc. Nat. Acad. Sci. 78,544,1981.
2. Novel Immunoregulatory Functions of Phenotypically Distinct Subpopulations of CD4+ cells in the Human Neonate. Clement, L.T., Vink, P.E., Bradley, G.E. J. Immunology 145(1):102-8,1990 .
3. Antigen Presentation by the CD4 Positive Monocyte Subset. Szabo, G., Miller, C.L., Kodys, K., J. Leukoc. Biol. 47(2): 111-20,1990.
4. Human Immunodeficiency Virus Infection is Efficiently Mediated by a Glycolipid-Anchored form of CD4. Diamond, D.C., Finberg, R., Chaudhuri, S., Sleckman, B.P., Burakoff, S.J., Proc. Natl. Acad. Sci. 87(13):5001-5,1990.
5. Development Regulation of the Intrathymic T cell Precursor Population. Adkins, B., J. Immunol. 146(5):1387-93,1991.
6. Induction of CD4 and Susceptibility to HIV-1 Infection in Human CD8+ T Lymphocytes by Human Herpesvirus 6. Lusso, P., De Maria, A., Malnati, M., Lori, F., DeRocco, S.E., Baseler, M., Gallo, R.C., Nat. 349(6309):533-5,1991.
7. Evolutionary Conservation of Surface Molecules that Distinguish T Lymphocyte Helper/Inducer and T Cytotoxic/Suppressor Subpopulations in Mouse and Man. Ledbetter, J.A., Evans, R.L., Lipinski, M., Cunningham-Rundles, C., Good, R.A., and Herzenberg, L.A., J. Exp. Med. 153,310, 1981.
8. Circulating Antigen-Specific Suppressor T Cells in a Healthy Woman: Mechanism of Action and Isolation with a Monoclonal Antibody. Engleman, E.G., Benike, C.J., and Evans, R.L., Clin. Res. 29, 365a 1981.
9. Induction of Immunoglobulin Secreting Cells in the Allogeneic Mixed Leukocyte Reaction: Regulation by Helper and Suppressor Lymphocyte Subsets in Man. Kotzin, B.L., Benike, C.J. and Engleman, E.G., J. Imm. 127,931,1981.
10. CD4 and CD8 molecules can physically associate with the same T-cell receptor. Gallagher, P.F., Fazekas de St. Groth, B., Miller, J.F.A.P., Proc. Nat. Acad. Sci. 1989,86:10044.
11. CD28 is an inducible T cell surface antigen that transduces a proliferative signal in CD3+ mature thymocytes. Turka LA; Ledbetter JA; Lee K; June CH; Thompson CB J Immunol 1990 Mar ;144(5):1646-53
12. CD28 ligation in T-cell activation: evidence for two signal transduction pathways. Ledbetter JA; Imboden JB; Schieven GL; Grosmaire LS; Rabinovitch PS; Lindsten T; Thompson CB; June CH Blood 1990 Apr ;75(7):1531-9
13. T-cell antigen CD28 mediates adhesion with B cells by interacting with activation antigen B7/BB-1. Linsley PS; Clark EA; Ledbetter JA Proc Natl Acad Sci U S A 1990 Ju;87(13):5031-5
14. Role of the CD28 receptor in T-cell activation. June CH; Ledbetter JA; Linsley PS; Thompson CB Immunol Today 1990 Ju;11(6):211-6
15. Differences in surface phenotype and mechanism of action between alloantigen-specific CD8+ cytotoxic and suppressor T cell clones. Koide J; Engleman EG J Immunol 1990 Jan ;144(1):32-40
16. Binding of the B cell activation antigen B7 to CD28 costimulates T cell proliferation and interleukin 2 mRNA accumulation. Linsley PS; Brady W; Grosmaire L; Aruffo A; Damle NK; Ledbetter JA J Exp Med 1991 Mar ;173(3):721-30
17. The CD28 ligand B7/BB1 provides costimulatory signal for alloactivation of CD4+ T cells. Koulova L; Clark EA; Shu G; Dupont B J Exp Med 1991 Mar ;173(3):759-62

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Exalpha Biologicals, Inc., 2 Shaker Rd, #B101, Shirley, MA 01464  
Tel: 800.395.1137 or 978.425.1370, Fax: 866.924.5100 or 978.425.1376, Web: [www.exalpha.com](http://www.exalpha.com)