Immunology Testing ($700)

Check Your Patient's Progress!

T.A. Sciences® recommends using UCLA's Immunology Test to healthcare practitioners who would like to check the status of a patient's immune system biomarkers while taking TA-65®.

How to Order

1) Contact T.A. Sciences® for your UCLA Immunology Test request via:
   Phone: (212) 588-8805
   Email: sales@tasciences.com
2) Provide T.A Sciences® with Patient information
3) Follow instructions to ship the Immunology Test Kit to UCLA
4) Test results are sent to you as soon as they become available
5) Interpretation instructions are given with all results!

Recommended Use: This test serves as a great baseline in conjunction with telomere testing. However, we recommend telomere testing to be done as a follow-up one year later to show progress. With the UCLA Immunology panel, a follow-up test can be done within 90 -180 days to show changes of the immune system biomarkers.

(212)588-8805 | sales@tasciences.com

UCLA Health | it begins with U

UCLA Health
Dept. of Pathology & Lab Medicine
Los Angeles, CA
United States

T.A SCIENCES
Fax #: 866-697-5535

NAME:	**536pe, Tasb**	AGE:	
MRN:		SEX:	**Unknown**
		DOB:	

Authorizing Provider:

External ID:
...

Copy To:
T.A. Sciences

See Values: B-Lymphocytes (CD19+) (L), CD8+/CD95- in CD3 (CD3+CD8+CD95-) (L), CD8+/CD95- in CD3 (CD3+CD8+CD95-) (L), CD8+/CD95- in CD8 (CD8+CD95-) (L), CD8+/CD95- in CD8 (CD8+CD95-) (L)

ID:	21IM-014I00077	Type/Src:	Blood
Collected:	1/13/2021 0830	Authorized by:	
Received:	1/14/2021 1025	Resulting Lab:	UCLAImmun
Verified On:	1/15/2021 1749		

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Senescent T CD8 (Final result)

Component	Value		Ref. Range
T-Lymphocytes (CD3+)	80		49 - 84 %
T-Lymphocytes (CD3+)	986		603-2,990 /cmm
T-Helper/Inducer (CD4+)	62		28 - 63 %
T-Helper/Inducer (CD4+)	760		441-2,156 /cmm
T-Suppressor/Cytotoxic (CD8+)	16		10 - 40 %
T-Suppressor/Cytotoxic (CD8+)	201		125-1,312 /cmm
Ratio (CD4:CD8)	3.77		0.96 - 3.93
B-Lymphocytes (CD19+)	8		7 - 27 %
B-Lymphocytes (CD19+)	**101**	**(L)**	107 - 698 /cmm
NK (CD56+/CD16+)	8		4 - 25 %
NK (CD56+/CD16+)	100		95 - 640 /cmm
CD8+/CD28- in CD3 (CD3+CD8+CD28-)	4		1 - 28 %
CD8+/CD28- in CD3 (CD3+CD8+CD28-)	39		11 - 359 /cmm
CD8+/CD95- in CD3 (CD3+CD8+CD95-)	**1**	**(L)**	3 - 27 %
CD8+/CD95- in CD3 (CD3+CD8+CD95-)	**10**	**(L)**	33 - 357 /cmm
CD8+/CD28- in CD8 (CD8+CD28-)	19		4 - 51 %
CD8+/CD28- in CD8 (CD8+CD28-)	38		17 - 364 /cmm
CD8+/CD95- in CD8 (CD8+CD95-)	**3**	**(L)**	11 - 57 %
CD8+/CD95- in CD8 (CD8+CD95-)	**6**	**(L)**	32 - 347 /cmm

Immune System Overview

Immune Function

These standard tests report the percentage and absolute numbers of specific subsets of immune system cells. They are excellent overall markers of general immune function. These subsets include:

- B-cells (CD19+ cells), which produce antibodies that can attack foreign material in the body such as toxic proteins or foreign cells. B-cells should fall within a normal reference range. B-Cell numbers typically do not change significantly with age.

- Natural Killer cells (NK, or CD16+/CD56+ cells), which are capable of rapidly killing foreign cells such as bacteria. The number of NK cells usually increases with age due to a weakening immune system which allows more foreign material to enter the blood stream. If the immune system is strengthened, the amount of foreign mater in the blood stream will decrease, and the number of NK cells will correspondingly decline. Thus, a decrease in NK cells is generally thought to indicate an improved immune system.

- PAN T-cells (CD3+ cells), which play a major role in cellular immunity and inflammation. T-cells consist of two major types: Helper T-cells (CD4+) and Cytotoxic T-cells (CD8+). Helper T-cells produce factors that help other immune4 cells respond appropriately to foreign invaders, while Cytotoxic T-cells are also capable of actually killing foreign invaders. T-cells of both types generally show subtle changes with age which are best seen by examining the Helper: Cytotoxic T-cell ratio (CD4+/CD8+). As individuals age this ratio tends to decline. Generally this ratio should be 2 or greater.

UCLA Special Immune System Tests

These also include two advanced tests that have been chosen by experts in the fields of immunology and aging to more thoroughly evaluate immune cells that are sensitive biomarkers of the health of your immune system. Both are subsets of the Cytotoxic T-cells described above. The first of these tests evaluates the total number and percent of one's Cytotoxic T-cells that are unhealthy, or "aged" as judged by the presence or absence of an important protein on the surface of the cell (CD28). Cytotoxic T-cells (the CD8+ T-cells) that are also negative for CD28 are less capable of killing abnormal cells in the body, such as cells invaded by a virus. The percent of unhealthy Cytotoxic T-cells is low when one is young and typically increases slowly with age or chronic stress, while telomere length shortens in these cells. Moreover, in people who test positive for the CMV virus, we have observed that the percent (and absolute number) of unhealthy CD8+ and CD28- (CD8+/CD28-) Cytotoxic T-cells is significantly higher, and telomere length is correspondingly shorter, compared to CMV-negative individuals. In laboratory experiments with human immune cells outside of the body, telomerase activators have been shown to prevent or delay this shortening and in some cases even reverse it, thereby preserving or improving immune function. A declining immune system accounts for a significant portion of the health problems associated with old age. Initial analysis of the data from Patton Protocol clients shows that the

T.A. Science product significantly increases the percent of healthy Cytotoxic T-cells, especially in those clients that test positive for the CMV virus. This improvement is seen within the first year.

The second specialized test conducted at UCLA evaluates the number of “naïve” Cytotoxic T cells (CD8+/CD95-). These cells represent unspecialized or inexperienced (hence naïve) Cytotoxic T cells. They are capable of becoming specialized, mature Cytotoxic T-cells when the body encounters a new foreign agent. They are important because, without a broad range of naïve cells, we are restricted in the breadth of immune responses we can mount against foreign agents. With age, the number and percent of naïve Cytotoxic T-cells declines. Initial analysis of the data from Patton Protocol clients suggests a trend for an increase in the percent of naïve Cytotoxic T cells after clients start taking the T.A. Sciences® product. Since this test was added only recently, more time will be required to assess whether this change is statistically significant.

Definition of the UCLA Test Items:

CD8+/CD28- gated on CD3: The percentage or absolute number of cells that express CD8 but not the CD28 molecule on their surface (CD8+CD28-) relative to, or within, the total population of CD3 cells (total lymphocytes).

CD8+/CD28- gated on CD8: The percentage or absolute number of cells that express CD8 but not the CD28 molecule on their surface (CD8+CD28-) relative to, or within, the total population of CD8 cells (total cytotoxic T cells).

CD8+/CD95- gated on CD3: The percentage or absolute number of cells that express CD8 but not the CD95 molecule on their surface (CD8+CD95-) relative to, or within, the total population of CD3 cells (total lymphocytes).

CD8+/CD95- gated on CD8: The percentage or absolute number of cells that express CD8 but not the CD95 molecule on their surface (CD8+CD95-) relative to, or within, the total population of CD8 cells (total cytotoxic T cells).

Interpretation of the UCLA Flow T-cell Subset Analysis:

1. CD8+/CD28-negative cells are considered aged, or unhealthy cells. Most of this aging occurs within the CD8+ population, for greatest emphasis should be placed on the CD8+/CD28- cells (% or absolute) gated on CD8.

On a percent basis any number greater than the high end of the reference range (49%) could be considered a warning with respect to immune health. Any number greater than the high end of the "absolute number" (364 cells/ul) is also a warning with respect to immune health. Ideally the physician and subject would track changes over time. A reduction in the % or number of CD8+/CD28- cells (gated onCD8) would be a positive trend, while an increase in the % or number of unhealthy cells would be considered a negative trend.
If the patient only sees his/her percent of "healthy" cells (i.e. % CD8+/CD28+ gated on CD8), then the interpretation is one wants to see a percentage of healthy cells greater than 49%. More importantly if your percentage of healthy cells is in the low end of the range (i.e. close to 49%), then it would be good to pay attention to this number and hopefully see it increase over time. Interpreting the absolute number of healthy cells requires a more sophisticated analysis, which I do not think is justified at this time.

2. The interpretation of the naive cells is similar, but in this case an increase in the number or percent of CD8+/CD95- cells gated on EITHER CD3 or CD8 is considered beneficial, as long as the numbers are within the normal range. In other words, the physician should look at the CD8+/CD95- numbers and consider that there is a health warning for the immune system if the

% gated on CD3 is less than 3, or the % gated on CD8 is less than 11. Numbers at the higher end of the range (3-27% and 11-57%, respectively) are considered better. Numbers higher than the reference range need to be examined in a broader context.

For the absolute numbers: the number of CD8+/CD95- cells gated on CD3 or CD8 should be greater than roughly 30, and within the reference range higher can be considered better, up to about 350). Again, numbers greater than 350 need to be considered in a broader context of the immune system before being judged either healthy or unhealthy. In general, if the client is within the reference range, stability or an increase in the % or absolute number of naive cells over time is considered a positive trend.