

What is a VLOOKUP?

A VLOOKUP is an Excel-function that looks for *something* in a range of cells.

Then it returns that something that's in the same row as the value you're looking for.

The only caveat is, that the datasheet has to be listed vertically (*which is the case 99% of the time*).

| U | V | W | X | Y | Z | AA | AB | AC |
|----|---------------|---------------------------|---------|---------|--------|---------|---------|----|
| 1 | gene_id | transcript_id(s) | D0 | hr4 | D1 | D2 | D7 | |
| 2 | 0610005C13Rik | NR_038165,NR_038166 | 0.51 | 0.44 | 0.625 | 0.585 | 5.73 | |
| 3 | 0610007P14Rik | NM_021446 | 129.795 | 39.17 | 58.035 | 48.61 | 49.97 | |
| 4 | 0610009B22Rik | NM_025319 | 46.93 | 39.4 | 62.515 | 78.485 | 95.275 | |
| 5 | 0610009L18Rik | NR_038126 | 4.705 | 2.455 | 2.355 | 1.545 | 3.025 | |
| 6 | 0610009O20Rik | NM_024179 | 23.04 | 10.85 | 24.965 | 37.47 | 59.125 | |
| 7 | 0610010B08Rik | NM_001177543 | 32.39 | 26.765 | 31.545 | 17.385 | 35.135 | |
| 8 | 0610010F05Rik | NM_027860 | 13.64 | 13.31 | 17.235 | 19.335 | 25.915 | |
| 9 | 0610010K14Rik | NM_001177601,NM_001177603 | 48.3 | 47.985 | 57.335 | 59.43 | 57.82 | |
| 10 | 0610011F06Rik | NM_026686 | 22.65 | 17.775 | 24.13 | 32.445 | 45.335 | |
| 11 | 0610012G03Rik | NR_027897 | 68.975 | 45.3 | 52.62 | 83.215 | 94.805 | |
| 12 | 0610030E20Rik | NM_026696 | 21.635 | 14.76 | 21.23 | 20.415 | 47.75 | |
| 13 | 0610031O16Rik | NR_045760 | 0 | 0 | 0.1 | 0 | 0 | |
| 14 | 0610037L13Rik | NM_028754 | 27.325 | 19.47 | 20.84 | 20.505 | 29.925 | |
| 15 | 0610038B21Rik | NR_028125 | 1.445 | 0.59 | 1.16 | 1.05 | 1.255 | |
| 16 | 0610039K10Rik | NR_028113 | 0.505 | 0.29 | 0.365 | 0.155 | 0.09 | |
| 17 | 0610040B10Rik | NR_027874 | 6.275 | 3.755 | 7.84 | 7.68 | 14.24 | |
| 18 | 0610040F04Rik | NR_040757,NR_104577 | 0.465 | 0.48 | 0.505 | 0.295 | 0.205 | |
| 19 | 0610040J01Rik | NM_029554 | 0 | 0 | 0.205 | 0 | 0 | |
| 20 | 0610043K17Rik | NR_040640 | 0.665 | 0.42 | 0.265 | 0.33 | 0.415 | |
| 21 | 1010001N08Rik | NR_105022,NR_105023 | 5.3 | 2.57 | 5.135 | 3.78 | 6.075 | |
| 22 | 1110001J03Rik | NM_025363 | 61.425 | 38.71 | 49.035 | 79.99 | 201.895 | |
| 23 | 1110002L01Rik | NR_030694 | 6.91 | 7.095 | 17.08 | 24.19 | 7.35 | |
| 24 | 1110004E09Rik | NM_026502 | 26.205 | 23.535 | 26.95 | 40.405 | 40.755 | |
| 25 | 1110004F10Rik | NR_019772 | 148.725 | 129.065 | 154.43 | 130.27 | 86.425 | |
| 26 | 1110006O24Rik | NR_027810 | 4.545 | 4.08 | 9.575 | 7.675 | 9.015 | |
| 27 | 1110007C09Rik | NR_026738 | 49.1 | 36.76 | 22.96 | 13.38 | 37.155 | |
| 28 | 1110008F13Rik | NM_026124 | 215.115 | 286.215 | 251.42 | 473.87 | 414.89 | |
| 29 | 1110008L16Rik | NM_025373 | 7.155 | 5.865 | 7.85 | 9.82 | 12.31 | |
| 30 | 1110008P14Rik | NM_198001 | 82.43 | 130.23 | 242.99 | 385.495 | 197.91 | |
| 31 | 1110012L19Rik | NM_026787 | 55.725 | 36.61 | 33.545 | 27.63 | 46.21 | |
| 32 | 1110015O18Rik | NM_026770 | 0 | 0 | 0 | 0 | 0 | |

This is an example of a table assembled from RNA-Seq time course data. TPM expression values are reported for the entire genome of 23,845 genes.

Vlookup is very useful when trying to compile a list of genes of interest and to extract the adjacent expression info.

Vlookup Example

| | A | B | C | D | E | F | G | H | I |
|----|------------------|------------|-----------|---|---|---|---|---|---|
| 1 | Full name | Department | Salary | | | | | | |
| 2 | Abigail Alderink | Sales | \$ 60.569 | | | | | | |
| 3 | Sanford Bartolo | Sales | \$ 81.603 | | | | | | |
| 4 | Samuel Bartnick | Sales | \$ 86.281 | | | | | | |
| 5 | John Dumas | IT | \$ 84.186 | | | | | | |
| 6 | Kristi Hines | Production | \$ 85.775 | | | | | | |
| 7 | Apple Lyn | IT | \$ 75.144 | | | | | | |
| 8 | Lee Nazal | HR | \$ 82.162 | | | | | | |
| 9 | Lindsay Kline | Marketing | \$ 98.915 | | | | | | |
| 10 | Vicky James | HR | \$ 83.207 | | | | | | |
| 11 | Bradley Sack | | \$ 64.7 | | | | | | |
| 12 | Steven Lamar | | \$ 64.9 | | | | | | |
| 13 | Tom Briones | | \$ 70.9 | | | | | | |
| 14 | Mike O'Neil | | \$ 72.254 | | | | | | |
| 15 | Elly Kam | Adm | \$ 63.434 | | | | | | |
| 16 | Steven Davidson | Adm | \$ 62.627 | | | | | | |

Where we are looking

What we want to return

3

The place for our formula

What we are looking for

2

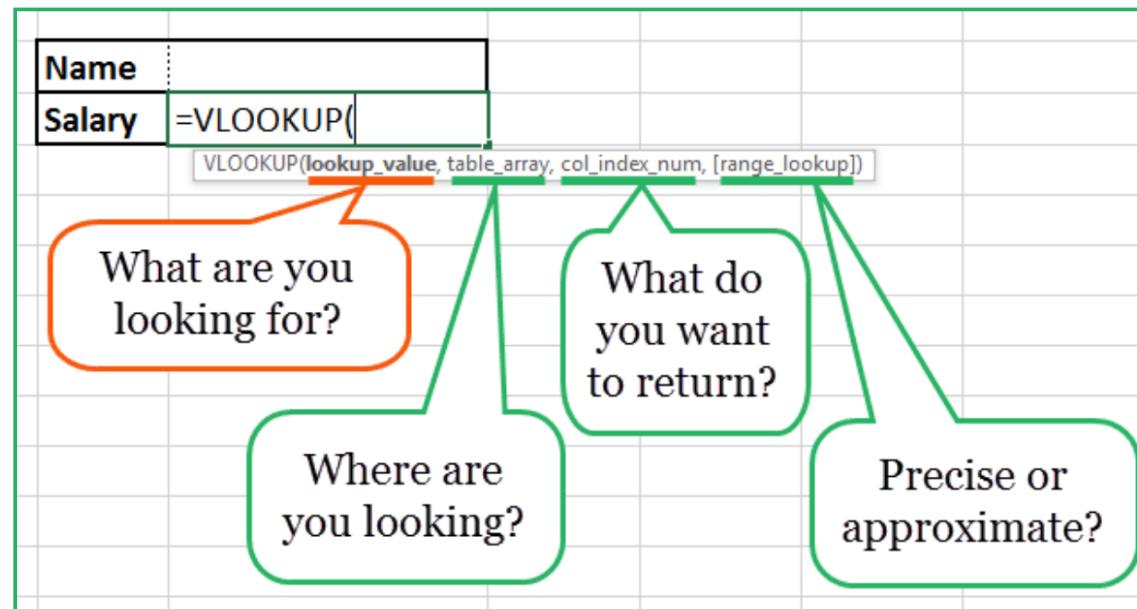
A VLOOKUP function needs these 4 inputs to work:

- **Lookup_value** = What you are looking for
- **Table_array** = Where you are looking
- **Col_index_num** = What we want to know
- **[range_lookup]** = Whether we want to be precise or approximate in our search

When we start entering the **formula** in a moment, you'll see all of these phrases inside a tooltip box below the cell you're typing in.

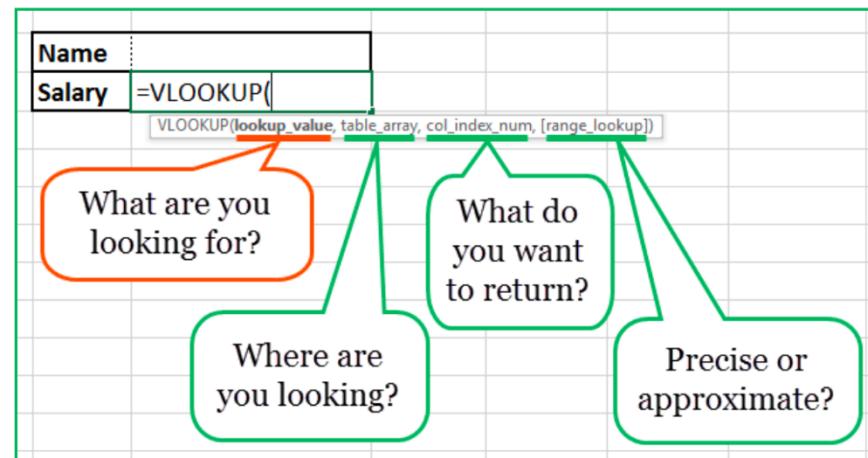
All these inputs to the VLOOKUP formula must be separated with a comma (like in most other functions).

=VLOOKUP(



| A | B | C | D | E | F | G | H | I |
|----|------------------|------------|-----------|---|---|---|---|---|
| 1 | Full name | Department | Salary | | | | | |
| 2 | Abigail Alderink | Sales | \$ 60.569 | | | | | |
| 3 | Sanford Bartolo | Sales | \$ 81.603 | | | | | |
| 4 | Samuel Bartnick | Sales | \$ 86.281 | | | | | |
| 5 | John Dumas | IT | \$ 84.186 | | | | | |
| 6 | Kristi Hines | Production | \$ 85.775 | | | | | |
| 7 | Apple Lyn | IT | \$ 75.144 | | | | | |
| 8 | Lee Nazal | HR | \$ 82.162 | | | | | |
| 9 | Lindsay Kline | Marketing | \$ 98.915 | | | | | |
| 10 | Vicky James | HR | \$ 83.207 | | | | | |
| 11 | Bradley Sack | | \$ 64.7 | | | | | |
| 12 | Steven Lamai | | \$ 64.9 | | | | | |
| 13 | Tom Briones | | \$ 70.9 | | | | | |
| 14 | Mike O'Neil | | \$ 72.254 | | | | | |
| 15 | Elly Kam | Adm | \$ 63.434 | | | | | |
| 16 | Steven Davidson | Adm | \$ 62.627 | | | | | |

=VLOOKUP(



| C | D | E | F | G | H | I |
|---------------|---|--------|---|---|---|---|
| Salary | | | | | | |
| \$ 60,569 | | Name | | | | |
| \$ 81,603 | | Salary | =VLOOKUP(\$F\$2, | | | |
| 7 86,281 | | | VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup]) | | | |
| \$ 84,186 | | | | | | |

To prevent the formula from being messed up, we **lock the reference** to cell F2.

This step is where we are looking for our guy Nate.

When you are looking for Nate Harris manually (using your eyes, not your awesome Excel skills), where do you look?

Well, Excel “looks” almost the same place.

So we’re looking in column A of the data – the one called ‘Full Name’ – Excel is also looking in column A with its creepy computer eyes.

However, **the VLOOKUP function needs to know the entire dataset** in order to return the information you want later on in step 4.

So select (or type) range A2 through C55 and press F4 (MAC: Cmd + T).

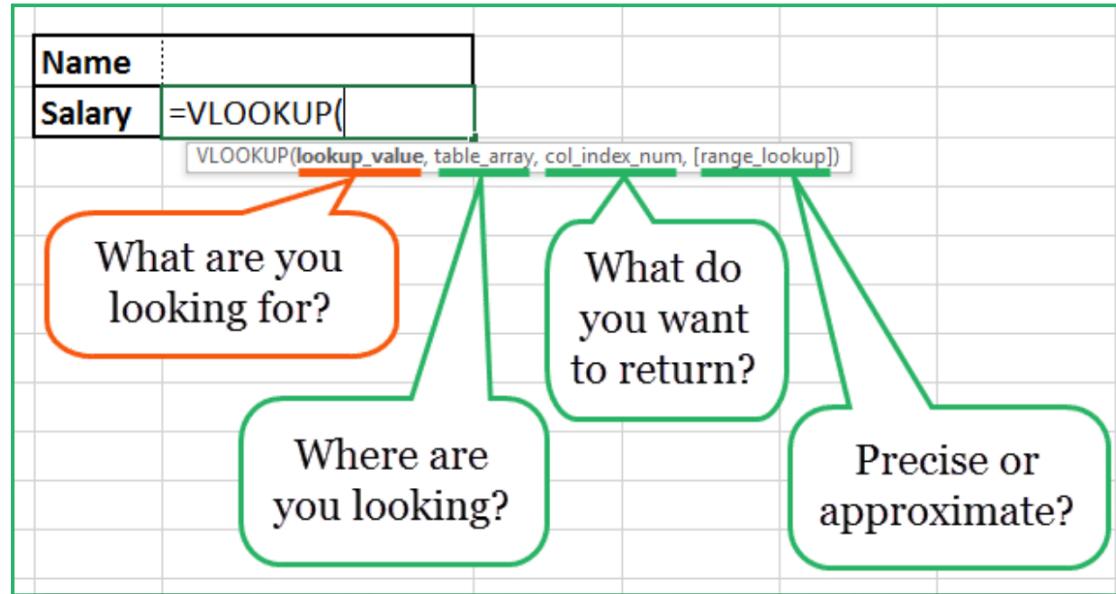
Now the reference to the range is locked and you can move on to the next step by typing a comma.

Your formula should look like this:

| A | B | C | D | E | F | G |
|-------------------|------------|-----------|---|---|---|---|
| Full name | Department | Salary | | | | |
| Abigail Aalderink | Sales | \$ 60,569 | | | | |
| Sanford Bartolo | Sales | \$ 81,603 | | | | |
| Samuel Bartnick | Sales | \$ 86,281 | | | | |
| John Dumas | IT | \$ 84,186 | | | | |

The screenshot shows a Microsoft Excel spreadsheet with data in columns A, B, and C. Column A contains names, column B contains department names, and column C contains salaries. A green arrow points from the text "So select (or type) range A2 through C55 and press F4 (MAC: Cmd + T)." to the formula bar. The formula bar displays the VLOOKUP function: =VLOOKUP(\$F\$2,\$A\$2:\$C\$55). Below the formula bar, a tooltip shows the full syntax: VLOOKUP(lookup_value, table_array, col_index). The entire formula bar area is highlighted with a blue selection box.

=VLOOKUP(



The third item that needs to be entered is which column of the array table you want to extract.

| C | D | E | F | G | H | I |
|-------|---|--------|---|---|---|---|
| ry | | | | | | |
| 0,569 | | Name | | | | |
| 1,603 | | Salary | =VLOOKUP(\$F\$2,\$A\$2:\$C\$55,3, | | | |
| 6,281 | | | VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup]) | | | |
| 4,186 | | | | | | |

A green arrow points from the text "Let's move on to the next step." to the "range_lookup" parameter in the VLOOKUP formula. A tooltip for this parameter shows two options: "TRUE - Approximate match" (selected) and "FALSE - Exact match".

Let's move on to the next step.

Step 5: Do you want to be precise or approximate?

When we look for something like a name (Nate Harris) and want to see his salary we don't want to find a Nathan Jones or a Nate Miller instead just because their names are close to each other's.

Excel deals with these 2 terms:

| “Approximate match” | “Exact match” |
|--|--|
| Used if you're looking for a value that is closest to your lookup value. | Used if you're looking for a value that is equal to your lookup value. |

Last value to enter is FALSE so you only extract EXACT matches from your array table

| U | V | W | X | Y | Z | AA | AB | AC |
|----|---------------|---------------------------|---------|---------|--------|---------|---------|----|
| 1 | gene_id | transcript_id(s) | D0 | hr4 | D1 | D2 | D7 | |
| 2 | 0610005C13Rik | NR_038165,NR_038166 | 0.51 | 0.44 | 0.625 | 0.585 | 5.73 | |
| 3 | 0610007P14Rik | NM_021446 | 129.795 | 39.17 | 58.035 | 48.61 | 49.97 | |
| 4 | 0610009B22Rik | NM_025319 | 46.93 | 39.4 | 62.515 | 78.485 | 95.275 | |
| 5 | 0610009L18Rik | NR_038126 | 4.705 | 2.455 | 2.355 | 1.545 | 3.025 | |
| 6 | 0610009O20Rik | NM_024179 | 23.04 | 10.85 | 24.965 | 37.47 | 59.125 | |
| 7 | 0610010B08Rik | NM_001177543 | 32.39 | 26.765 | 31.545 | 17.385 | 35.135 | |
| 8 | 0610010F05Rik | NM_027860 | 13.64 | 13.31 | 17.235 | 19.335 | 25.915 | |
| 9 | 0610010K14Rik | NM_001177601,NM_001177603 | 48.3 | 47.985 | 57.335 | 59.43 | 57.82 | |
| 10 | 0610011F06Rik | NM_026686 | 22.65 | 17.775 | 24.13 | 32.445 | 45.335 | |
| 11 | 0610012G03Rik | NR_027897 | 68.975 | 45.3 | 52.62 | 83.215 | 94.805 | |
| 12 | 0610030E20Rik | NM_026696 | 21.635 | 14.76 | 21.23 | 20.415 | 47.75 | |
| 13 | 0610031O16Rik | NR_045760 | 0 | 0 | 0.1 | 0 | 0 | |
| 14 | 0610037L13Rik | NM_028754 | 27.325 | 19.47 | 20.84 | 20.505 | 29.925 | |
| 15 | 0610038B21Rik | NR_028125 | 1.445 | 0.59 | 1.16 | 1.05 | 1.255 | |
| 16 | 0610039K10Rik | NR_028113 | 0.505 | 0.29 | 0.365 | 0.155 | 0.09 | |
| 17 | 0610040B10Rik | NR_027874 | 6.275 | 3.755 | 7.84 | 7.68 | 14.24 | |
| 18 | 0610040F04Rik | NR_040757,NR_104577 | 0.465 | 0.48 | 0.505 | 0.295 | 0.205 | |
| 19 | 0610040J01Rik | NM_029554 | 0 | 0 | 0.205 | 0 | 0 | |
| 20 | 0610043K17Rik | NR_040640 | 0.665 | 0.42 | 0.265 | 0.33 | 0.415 | |
| 21 | 1010001N08Rik | NR_105022,NR_105023 | 5.3 | 2.57 | 5.135 | 3.78 | 6.075 | |
| 22 | 1110001J03Rik | NM_025363 | 61.425 | 38.71 | 49.035 | 79.99 | 201.895 | |
| 23 | 1110002L01Rik | NR_030694 | 6.91 | 7.095 | 17.08 | 24.19 | 7.35 | |
| 24 | 1110004E09Rik | NM_026502 | 26.205 | 23.535 | 26.95 | 40.405 | 40.755 | |
| 25 | 1110004F10Rik | NM_019772 | 148.725 | 129.065 | 154.43 | 130.27 | 86.425 | |
| 26 | 1110006O24Rik | NR_027810 | 4.545 | 4.08 | 9.575 | 7.675 | 9.015 | |
| 27 | 1110007C09Rik | NM_026738 | 49.1 | 36.76 | 22.96 | 13.38 | 37.155 | |
| 28 | 1110008F13Rik | NM_026124 | 215.115 | 286.215 | 251.42 | 473.87 | 414.89 | |
| 29 | 1110008L16Rik | NM_025373 | 7.155 | 5.865 | 7.85 | 9.82 | 12.31 | |
| 30 | 1110008P14Rik | NM_198001 | 82.43 | 130.23 | 242.99 | 385.495 | 197.91 | |
| 31 | 1110012L19Rik | NM_026787 | 55.725 | 36.61 | 33.545 | 27.63 | 46.21 | |
| 32 | 1110015O18Rik | NM_0245222 | 0 | 0 | 0 | 0 | 0 | |

This is an example of a table assembled from RNA-Seq time course data. TPM expression values are reported for the entire genome of 23,845 genes.

Vlookup is very useful when trying to compile a list of genes of interest and to extract the adjacent expression info.

To pull the second column info from the array table, observe that the vlookup equation item col_index_num gets changed to a 2

| | V | VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup]) | | | | | | AC | AD | AE | AF | AG | AH | AI | AJ | AK |
|----|---------------|---|----|-----|----|----|----|----|-------------------------|---------|---------------|----|-----|----|----|----|
| 1 | gene_id | transcript_id(s) | D0 | hr4 | D1 | D2 | D7 | | Genes I'm interested in | gene_id | transcript_id | D0 | hr4 | D1 | D2 | D7 |
| 2 | 0610005C13Rik | NR_038165,NR_038166 | | 1 | 0 | 1 | 1 | 6 | Mt2 | | | | | | | |
| 3 | 0610007P14Rik | NM_021446 | | 130 | 39 | 58 | 49 | 50 | Mt4 | | | | | | | |
| 4 | 0610009B22Rik | NM_025319 | | 47 | 39 | 63 | 78 | 95 | Mt2 | | | | | | | |
| 5 | 0610009L18Rik | NR_038126 | | 5 | 2 | 2 | 2 | 3 | Slc25a3 | | | | | | | |
| 6 | 0610009O20Rik | NM_024179 | | 23 | 11 | 25 | 37 | 59 | Sod1 | | | | | | | |
| 7 | 0610010B08Rik | NM_001177543 | | 32 | 27 | 32 | 17 | 35 | Cox | | | | | | | |
| 8 | 0610010F05Rik | NM_027860 | | 14 | 13 | 17 | 19 | 26 | Atp7a | | | | | | | |
| 9 | 0610010K14Rik | NM_001177601,NM_001177602 | | 48 | 48 | 57 | 59 | 58 | Atp7b | | | | | | | |
| 10 | 0610011F06Rik | NM_026686 | | 23 | 18 | 24 | 32 | 45 | | | | | | | | |
| 11 | 0610012G03Rik | NR_027897 | | 69 | 45 | 53 | 83 | 95 | | | | | | | | |
| 12 | 0610030E20Rik | NM_026696 | | 22 | 15 | 21 | 20 | 48 | | | | | | | | |
| 13 | 0610031O16Rik | NR_045760 | | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| 14 | 0610037L13Rik | NM_028754 | | 27 | 19 | 21 | 21 | 30 | | | | | | | | |
| 15 | 0610038B21Rik | NR_028125 | | 1 | 1 | 1 | 1 | 1 | | | | | | | | |
| 16 | 0610039K10Rik | NR_028113 | | 1 | 0 | 0 | 0 | 0 | | | | | | | | |
| 17 | 0610040B10Rik | NR_027874 | | 6 | 4 | 8 | 8 | 14 | | | | | | | | |
| 18 | 0610040F04Rik | NR_040757,NR_104577 | | 0 | 0 | 1 | 0 | 0 | | | | | | | | |
| 19 | 0610040J01Rik | NM_029554 | | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| 20 | 0610043K17Rik | NR_040640 | | 1 | 0 | 0 | 0 | 0 | | | | | | | | |
| 21 | 1010001N08Rik | NR_105022,NR_105023 | | 5 | 3 | 5 | 4 | 6 | | | | | | | | |

Col_index_num gets changes to a 7 to pull the 7th columns info

| | V | W | X | Y | Z | AA | AB | AC | AD | AE | AF | AG | AH | AI | AJ | AK |
|----|---------------|---------------------------|----|-----|----|----|----|----|-------------------------|---------|---------------|----|-----|----|----|----|
| 1 | gene_id | transcript_id(s) | D0 | hr4 | D1 | D2 | D7 | | Genes I'm interested in | gene_id | transcript_id | D0 | hr4 | D1 | D2 | D7 |
| 2 | 0610005C13Rik | NR_038165,NR_038166 | | 1 | 0 | 1 | 1 | 6 | Mt2 | | | | | | | |
| 3 | 0610007P14Rik | NM_021446 | | 130 | 39 | 58 | 49 | 50 | Mt4 | | | | | | | |
| 4 | 0610009B22Rik | NM_025319 | | 47 | 39 | 63 | 78 | 95 | Mt2 | | | | | | | |
| 5 | 0610009L18Rik | NR_038126 | | 5 | 2 | 2 | 2 | 3 | Slc25a3 | | | | | | | |
| 6 | 0610009O20Rik | NM_024179 | | 23 | 11 | 25 | 37 | 59 | Sod1 | | | | | | | |
| 7 | 0610010B08Rik | NM_001177543 | | 32 | 27 | 32 | 17 | 35 | Cox | | | | | | | |
| 8 | 0610010F05Rik | NM_027860 | | 14 | 13 | 17 | 19 | 26 | Atp7a | | | | | | | |
| 9 | 0610010K14Rik | NM_001177601,NM_001177602 | | 48 | 48 | 57 | 59 | 58 | Atp7b | | | | | | | |
| 10 | 0610011F06Rik | NM_026686 | | 23 | 18 | 24 | 32 | 45 | | | | | | | | |
| 11 | 0610012G03Rik | NR_027897 | | 69 | 45 | 53 | 83 | 95 | | | | | | | | |
| 12 | 0610030E20Rik | NM_026696 | | 22 | 15 | 21 | 20 | 48 | | | | | | | | |
| 13 | 0610031O16Rik | NR_045760 | | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| 14 | 0610037L13Rik | NM_028754 | | 27 | 19 | 21 | 21 | 30 | | | | | | | | |
| 15 | 0610038B21Rik | NR_028125 | | 1 | 1 | 1 | 1 | 1 | | | | | | | | |
| 16 | 0610039K10Rik | NR_028113 | | 1 | 0 | 0 | 0 | 0 | | | | | | | | |
| 17 | 0610040B10Rik | NR_027874 | | 6 | 4 | 8 | 8 | 14 | | | | | | | | |
| 18 | 0610040F04Rik | NR_040757,NR_104577 | | 0 | 0 | 1 | 0 | 0 | | | | | | | | |
| 19 | 0610040J01Rik | NM_029554 | | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| 20 | 0610043K17Rik | NR_040640 | | 1 | 0 | 0 | 0 | 0 | | | | | | | | |
| 21 | 1010001N08Rik | NR_105022,NR_105023 | | 5 | 3 | 5 | 4 | 6 | | | | | | | | |

Copy and paste the first line to the remaining rows and the table will autofill with the appropriate RNA-Seq TPM values

| Genes I'm interested in | gene_id | transcript_id | D0 | hr4 | D1 | D2 | D7 |
|-------------------------|---------|---------------|--------|---------|---------|---------|----------|
| Mt2 | Mt2 | NM_008630 | 353.72 | 2584.07 | 488.255 | 437.625 | 1132.615 |
| Mt4 | | | | | | | |
| Slc25a3 | | | | | | | |
| Sod1 | | | | | | | |
| Cox | | | | | | | |
| Atp7a | | | | | | | |
| Atp7b | | | | | | | |

Select row and drag down to copy paste



| Genes I'm interested in | gene_id | transcript_id | D0 | hr4 | D1 | D2 | D7 |
|-------------------------|---------|---------------|---------|---------|---------|----------|----------|
| Mt2 | Mt2 | NM_008630 | 353.72 | 2584.07 | 488.255 | 437.625 | 1132.615 |
| Mt4 | Mt4 | NM_008631 | 0 | 1.35 | 0 | 0 | 0 |
| Slc25a3 | Slc25a3 | NM_133668 | 488.56 | 681.46 | 735.375 | 1047.365 | 752.125 |
| Sod1 | Sod1 | NM_011434 | 605.735 | 571.39 | 717.06 | 2051.08 | 3018.46 |
| Cox | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A |
| Atp7a | Atp7a | 1109757,NM_ | 26.045 | 34.16 | 25.625 | 15.695 | 15.82 |
| Atp7b | Atp7b | NM_007511 | 0.295 | 0.015 | 0.165 | 0.025 | 0.465 |

| AG8 | | | | | | | | | | | | | | | |
|-----|-------------------|-----|-----|----|----|----|----|-------------------------|---------|---------------|---------|---------|---------|----------|----------|
| | W | X | Y | Z | AA | AB | AC | AD | AE | AF | AG | AH | AI | AJ | AK |
| 1 | d(s) | D0 | hr4 | D1 | D2 | D7 | | Genes I'm interested in | gene_id | transcript_id | D0 | hr4 | D1 | D2 | D7 |
| 2 | 5,NR_038166 | 1 | 0 | 1 | 1 | 6 | | Mt2 | Mt2 | NM_008630 | 353.72 | 2584.07 | 488.255 | 437.625 | 1132.615 |
| 3 | 6 | 130 | 39 | 58 | 49 | 50 | | Mt4 | Mt4 | NM_008631 | 0 | 1.35 | 0 | 0 | 0 |
| 4 | 9 | 47 | 39 | 63 | 78 | 95 | | Slc25a3 | Slc25a3 | NM_133668 | 488.56 | 681.46 | 735.375 | 1047.365 | 752.125 |
| 5 | 5 | 5 | 2 | 2 | 2 | 3 | | Sod1 | Sod1 | NM_011434 | 605.735 | 571.39 | 717.06 | 2051.08 | 3018.46 |
| 6 | 9 | 23 | 11 | 25 | 37 | 59 | | Cox | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A |
| 7 | 7543 | 32 | 27 | 32 | 17 | 35 | | Atp7a | Atp7a | 1109757,NM_ | 26.045 | 34.16 | 25.625 | 15.695 | 15.82 |
| 8 | 0 | 14 | 13 | 17 | 19 | 26 | | Atp7b | Atp7b | NM_007511 | 0.295 | 0.015 | 0.165 | 0.025 | 0.465 |
| 9 | 7601,NM_001177603 | 48 | 48 | 57 | 59 | 58 | | | | | | | | | |
| 10 | 6 | 23 | 18 | 24 | 32 | 45 | | | | | | | | | |
| 11 | 7 | 69 | 45 | 53 | 83 | 95 | | | | | | | | | |
| 12 | 6 | 22 | 15 | 21 | 20 | 48 | | | | | | | | | |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | |
| 14 | 4 | 27 | 19 | 21 | 21 | 30 | | | | | | | | | |
| 15 | 5 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | |
| 16 | 3 | 1 | 0 | 0 | 0 | 0 | | | | | | | | | |
| 17 | 4 | 6 | 4 | 8 | 8 | 14 | | | | | | | | | |
| 18 | 7,NR_104577 | 0 | 0 | 1 | 0 | 0 | | | | | | | | | |
| 19 | 4 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | |
| 20 | 0 | 1 | 0 | 0 | 0 | 0 | | | | | | | | | |

Look at the equation for cell AG7

| Genes I'm interested in | gene_id | transcript_id | D0 | hr4 | D1 | D2 | D7 |
|-------------------------|---------|---------------|---------|---------|---------|----------|----------|
| Mt2 | Mt2 | NM_008630 | 353.72 | 2584.07 | 488.255 | 437.625 | 1132.615 |
| Mt4 | Mt4 | NM_008631 | 0 | 1.35 | 0 | 0 | 0 |
| Slc25a3 | Slc25a3 | NM_133668 | 488.56 | 681.46 | 735.375 | 1047.365 | 752.125 |
| Sod1 | Sod1 | NM_011434 | 605.735 | 571.39 | 717.06 | 2051.08 | 3018.46 |
| Cox | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A |
| Atp7a | Atp7a | 1109757,NM_ | 26.045 | 34.16 | 25.625 | 15.695 | 15.82 |
| Atp7b | Atp7b | NM_007511 | 0.295 | 0.015 | 0.165 | 0.025 | 0.465 |

Confirm that vlookup is working by manually looking up Atp7B in the original table

The screenshot shows a Microsoft Excel spreadsheet with two main parts. On the left, there is a table of gene expression data across 25 rows, spanning columns U through AH. The columns represent gene IDs, transcript IDs, and various statistical measures (D0, hr4, D1, D2, D7). On the right, a 'Find' dialog box is open, containing fields for 'Find what' (set to 'atp7b'), 'Within' (set to 'Sheet'), 'Search' (set to 'By Rows'), and 'Look in' (set to 'Formulas'). The 'Find Next' button is highlighted.

| | U | V | W | X | Y | Z | AA | AB | AC | AD | AE | AF | AG | AH |
|------|---|----------|---------------------------|---------|---------|---------|---------|---------|-------------------------|---------|---------------|----|-----|----|
| 1 | | gene_id | transcript_id(s) | D0 | hr4 | D1 | D2 | D7 | Genes I'm interested in | gene_id | transcript_id | D0 | hr4 | |
| 3003 | | Atp6v0e2 | NM_133764 | 3.780 | 2.310 | 3.025 | 2.705 | 11.315 | | | | | | |
| 3004 | | Atp6v1a | NM_007508 | 199.970 | 86.645 | 124.780 | 273.965 | 147.085 | | | | | | |
| 3005 | | Atp6v1b1 | NM_134157 | 0.045 | 0.045 | 0.080 | 0.035 | 0.000 | | | | | | |
| 3006 | | Atp6v1b2 | NM_007509 | 166.045 | 78.605 | 109.375 | 134.210 | 174.470 | | | | | | |
| 3007 | | Atp6v1c1 | NM_025494 | 89.760 | 47.460 | 50.270 | 71.645 | 78.165 | | | | | | |
| 3008 | | Atp6v1c2 | NM_001159632,NM_133699 | 0.135 | 0.000 | 0.050 | 0.165 | 0.050 | | | | | | |
| 3009 | | Atp6v1d | NM_023721 | 133.440 | 49.415 | 64.795 | 91.975 | 111.340 | | | | | | |
| 3010 | | Atp6v1e1 | NM_007510 | 308.190 | 248.265 | 221.955 | 356.460 | 335.515 | | | | | | |
| 3011 | | Atp6v1e2 | NM_029121 | 0.000 | 0.000 | 0.080 | 0.065 | 0.000 | | | | | | |
| 3012 | | Atp6v1f | NM_025381 | 481.460 | 289.295 | 264.870 | 360.375 | 298.385 | | | | | | |
| 3013 | | Atp6v1g1 | NM_024173 | 343.050 | 242.265 | 203.370 | 245.855 | 235.370 | | | | | | |
| 3014 | | Atp6v1g2 | NM_023179 | 2.810 | 1.410 | 2.375 | 0.865 | 0.990 | | | | | | |
| 3015 | | Atp6v1g3 | NM_177397 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | | | | | |
| 3016 | | Atp6v1h | NM_133826 | 131.765 | 129.800 | 101.990 | 137.015 | 112.785 | | | | | | |
| 3017 | | Atp7a | NM_001109757,NM_009726 | 26.045 | 34.160 | 25.625 | 15.695 | 15.820 | | | | | | |
| 3018 | | Atp7b | NM_007511 | 0.295 | 0.015 | 0.165 | 0.025 | 0.465 | | | | | | |
| 3019 | | Atp8a1 | NM_001038999,NM_001284345 | 0.010 | 0.010 | 0.035 | 0.010 | 0.000 | | | | | | |
| 3020 | | Atp8a2 | NM_015803 | 0.065 | 0.000 | 0.225 | 0.175 | 0.045 | | | | | | |
| 3021 | | Atp8b1 | NM_001001488 | 0.050 | 0.000 | 0.045 | 0.010 | 0.025 | | | | | | |
| 3022 | | Atp8b2 | NM_001081182 | 87.720 | 103.420 | 74.535 | 29.505 | 19.455 | | | | | | |
| 3023 | | Atp8b3 | NM_026094 | 0.270 | 0.070 | 0.105 | 0.030 | 0.150 | | | | | | |
| 3024 | | Atp8b4 | NM_001080944 | 0.885 | 0.355 | 0.480 | 0.130 | 0.370 | | | | | | |
| 3025 | | Atp8b5 | NM_177195 | 0.560 | 0.260 | 0.560 | 0.315 | 0.400 | | | | | | |

You can see that vlookup pulled out the proper info for genes Atp7a and Atp7b