OPA Excel Tips: Merging in data from another sheet (VLOOKUPs)

There are a number of situations where it is helpful to merge two datasets or copy a variable from one dataset to another. The VLOOKUP function in Excel is a very handy way to do this.

A VLOOKUP looks for a specified value in an array of data (usually in another worksheet or workbook), and returns the value from a specified column. (HLOOKUP is the same but looks for rows)

The VLOOKUP command requires four pieces of information:

Look up value: The value you want to look up e.g. and Application ID. This is usual a cell reference and changes for each line of the dataset. It is possible to look up any cell value (text or numeric) but the method is most reliable when using an ID number as text (e.g. institution name) may have different spellings or a space after the final letter for example. These differences would prevent Excel from making the match.

It is also important to consider the two datasets you are using e.g. if there are multiple rows per project number Excel will just copy across the value from the first match.

Table array: the dataset that you want to look to for the variable of interest. This needs to include the value you are looking up in the leftmost column e.g. if you were looking up based on AppIID, the first column of the array would need to contain AppIID. This doesn't need to be the first column on the worksheet though.

Column number: The number of the column in the array that contains the variable you are interested in. This is independent of the number of columns in the spreadsheet e.g. if the array you select is columns B to D and the variable is in column D, you would instruct the VLOOKUP to use column 3.

Range lookup: Enter 'false' to ensure Excel searches for an exact match for the lookup value.



Example 1: Merging Application Status onto the Transplantation dataset.

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9	8108873	1	R01	HL103709-01A1	TZANAKAKIS, EMMANOUHI		2011	HL	Bioproces	DESCRI	1. SPECIE	\$379,711	
10	8504313	1	R01	DK098787-01	BUCHWALD, DEDRA S		2012	DK	Culturally	DESCR	2. SPECIE	\$211,602	
11	8508395	1	R21	AA021225-01A1	CALLACI, JOHN J		2013	AA	Alcohol E	DESCR	2. SPECIE	\$217,063	
12	7581820	2	R01	AI053193-06A1	RIDDELL, STANLEY R.		2009	AI	CD8+TC	DESCRI	2. SPECIF	\$502,469	
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15	7735633	2	R01	AI052079-05A2	KEARNS-JONKER, MARY K		2009	AI	Non-Hum	DESCRI	2. Specif	\$400,000	

In this example the Transplantation dataset is used.

Assume we want to add on the project status and institution e.g. to find out how many of the applications have been awarded and that we have this data in a separate Excel file. In this example it would be possible to download a complete new dataset from QVR but it isn't always this straightforward, for example you may have a manually curated flag to indicate how long an institution or PI has been receiving funding from your IC and want to attach that to a QVR dataset.

An Excel file with Institution name and application status is shown below. It is also available on the OPA training pages as Transplant_Inst_Status_data.

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Note both datasets have similar identifying variables (Application ID, Project number) which are vital to enable VLOOKUPs to work.

Step 1.	Add heade	r to new	column
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Next enter the VLOOKUP formula in cell. The formula is:

=vlookup([cell with ID value of interest],[group of cells to look to for values],[Column number of interest],False)

So in this instance, we want to look up based on ApplID so in cell L2, the value to look up is held in cell A2.

The group of cells (array) we're interested in is in the Transplant_Inst_Status_data worksheet, and needs to have AppIID as the first column (though it doesn't have to be the first column in the worksheet). Selecting columns A to G as the array ensures AppIID is in the first column and we can then select any of the values in the dataset to pull across to the Transplantation dataset.

Status is in column D, the fourth column in the array selected, so we put column '4' into the formula.

Before copying the formula to the entire column, make sure that there are '\$' symbols before the letters and numbers in the array cell references, otherwise when copying and pasting the array may change. The '\$' symbol tells Excel to fix the column and row values in the formula. When using an array in a different workbook, Excel does this automatically, when referring to a different worksheet in the same workbook, you need to do it manually.

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Example 2: Merging Institution onto the Transplantation dataset.

If you have worked through the first example, you can copy and paste the formula from cell L2 into cell M2.

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This gives an error message as it's looking for the value in cell B2 in the ApplID column in the Transplant_Inst_Status_data sheet, which doesn't exist.



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		R C	D	F			т	1	V		M N	_
1		Type Ac	v Project	PI Name(s) All	FY IC	Title	Abstract 1	SA Text	Awd Tot S	Status	19 10	
2	7987780	2 R01	HL075353-06	MESSINA, LOUIS MICHAEL	2010 HL	Mesenchy	DESCRI	1 I. Spe	\$411,250	Awar 🚸 .	#N/A	
3	8435690	1 R21	HL113777-01A1	LIBONATI, JOSEPH ROCCO (contact); MARGUL	2013 HL	Exercise o	DESCR	A. Spec	\$200,000	Awarded.	Non-fellowsh 👝 (C+	-l) -
4	8245505	1 R01	AR061460-01A1	FISHER, JOHN P.	2011 AR	Applicatio	DESCRI	II. SPECI	\$355,245	Awarded.	Non-fellowships only	<u> </u>
5	8159876	1 R01	EY021768-01	KAO, WINSTON W	2011 EY	Cell There	DESCRI	P.I. Kao	\$530,406	Awarded.	Non-fellowships only	1
6	8400215	1 R01	DK095001-01A1	MIETHKE, ALEXANDER	2012 DK	The role o	DESCR	SPECIFIC	\$333,825	Awarded.	Non-fellowships only	1
7	8415397	1 U18	TR000536-01	LYNCH, JOHN P.	2012 TR	Modeling	DESCR	SPECIFIC	\$375,600	Awarded.	Non-fellowships only	1
8	7672945	1 R43	DK083832-01	POO, RAMON E.	2009 DK	A perfluor	DESCRI	1. SPECIF	\$100,000	Awarded.	Non-fellowships only	/
9	8108873	1 R01	HL103709-01A1	TZANAKAKIS, EMMANOUHL	2011 HL	Bioproces	DESCRI	1. SPECIF	\$379,711	Awarded.	Non-fellowships only	1
10	8504313	1 R01	DK098787-01	BUCHWALD, DEDRA S	2012 DK	Culturally	DESCR	2. SPECIF	\$211,602	Awarded.	Non-fellowships only	1
11	8508395	1 R21	AA021225-01A1	CALLACI, JOHN J	2013 AA	Alcohol E	DESCR	2. SPECIF	\$217,063	Awarded.	Non-fellowships only	1
12	7581820	2 R01	Al053193-06A1	RIDDELL, STANLEY R.	2009 AI	CD8+TC	DESCRI	2. SPECIF	\$502,469	Awarded.	Non-fellowships only	/
13	7731198	1 R01	CA136551-01A1	RIDDELL, STANLEY R. (contact); JENSEN, MICHA	2009 CA	A Targeted	DESCRI	2. SPECIF	\$551,563	Awarded.	Non-fellowships only	/
14	8371082	2 R01	DK079713-06	ARRIOLA, KIMBERLY RUTH JACOB	2012 DK	Project A	DESCR	2. Specif	\$240,878	Awarded.	Non-fellowships only	1
15	7735633	2 R01	AI052079-05A2	KEARNS-JONKER, MARY K	2009 AI	Non-Hum	DESCRI	2. Specif	\$400,000	Awarded.	Non-fellowships only	/
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Change the value 'B2' to 'A2'. You can get round this by putting a '\$' in front of the A to ensure that Excel keeps the column A in the formula when you copy and paste. Also change the column to copy over from '4' which contains the status description to '6' which contains institution name.

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3	8435690	1 R2	21 H	IL113777-01A1	LIBONATI, JOSE	EPH ROCCO	(contact); MARG	SULI 2013	B HL	Exercise of	DESCR	A. Spec	\$200,000	Awarded.	UNIVERSIT	Y OF PEN	NSYLVANIA	L	
4	8245505	1 R0	D1 A	R061460-01A1	FISHER, JOHN	Ρ.		2011	AR	Applicati	DESCRI	II. SPECI	\$355,245	Awarded.	UNIV OF M	ARYLAND,	, COLLEGE PA	RK	
5	8159876	1 R0	D1 E	Y021768-01	KAO, WINSTON	1 W		2011	EY	Cell There	DESCRI	P.I. Kao	\$530,406	Awarded.	UNIVERSIT	Y OF CINC	CINNATI		
6	8400215	1 R0	D1 D	0K095001-01A1	MIETHKE, ALEX	ANDER		2012	2 DK	The role of	DESCR	SPECIFIC	\$333,825	Awarded.	CINCINNAT	I CHILDRE	ENS HOSP ME) CTR	
7	8415397	1 U	18 TR	R000536-01	LYNCH, JOHN	Ρ.		2012	2 TR	Modeling	DESCR	SPECIFIC	\$375,600	Awarded.	UNIVERSIT	Y OF PEN	NSYLVANIA		
8	7672945	1 R4	43 D	K083832-01	POO, RAMON	E.		2009	DK	A perfluo	r DESCRI	1. SPECI	\$100,000	Awarded.	BIOREP TE	CHNOLOG	IES, INC.		
9	8108873	1 R0	D1 H	IL103709-01A1	TZANAKAKIS, E	MMANOUHL		2011	HL	Bioproces	DESCRI	1. SPECI	\$379,711	Awarded.	STATE UN	VERSITY	OF NEW YOR	K AT BUFFAL	_0
10	8504313	1 R0	D1 D	0K098787-01	BUCHWALD, D	EDRA S		2012	2 DK	Culturally	DESCR	2. SPECI	\$211,602	Awarded.	UNIVERSIT	Y OF WAS	SHINGTON		
11	8508395	1 R2	21 A	A021225-01A1	CALLACI, JOH	NЈ		2013	B AA	Alcohol E	DESCR	2. SPECI	\$217,063	Awarded.	LOYOLA U	VIVERSITY	Y CHICAGO		
12	7581820	2 R0	01 A	053193-06A1	RIDDELL, STAN	LEY R.		2009	A	CD8+TC	DESCRI	2. SPECI	\$502,469	Awarded.	FRED HUTO	HINSON (CANCER RESE	ARCH CENTE	R
13	7731198	1 R0	01 C	CA136551-01A1	RIDDELL, STAN	LEY R. (conto	act); JENSEN, MIC	HA 2009	CA	Targeted	DESCRI	2. SPECI	\$551,563	Awarded.	FRED HUTC	HINSON (CANCER RESE	ARCH CENTE	R
14	8371082	2 R0	01 D	0K079713-06	ARRIOLA, KIME	BERLY RUTH JA	COB	2012	2 DK	Project A	DESCR	2. Specif	\$240,878	Awarded.	EMORY UN	IVERSITY			
15	7735633	2 R0	D1 A	052079-05A2	KEARNS-JONK	ER, MARY K		2009	AI	Non-Hum	DESCRI	2. Specif	\$400,000	Awarded.	CHILDREN'	5 HOSPIT/	AL OF LOS AN	IGELES	
16	8591825	1 R4	41 O	DD018403-01	MARSH, HENRY	(contact);	YU, JIANHUA	2013		CDX-301	DESCR	2.2 SPEC	\$100,000	Awarded.	CELLDEX T	HERAPEU	TICS, INC.		
17	7785204	1 R0	01 N	IS065109-01A1	BELLAMKOND	A, RAVI V.		2009	NS	A Ration	DESCRI	A Ration	\$338,926	Awarded.	GEORGIA I	NSTITUTE	OF TECHNO	LOGY	
18	7741820	1 R0	01 D	K083411-01A1	LIN, FANGMIN	G		2009	DK	STEM CEL	DESCRI	a. Speci	\$376,800	Awarded.	UT SOUTH	WESTERN	MEDICAL CE	NTER	
19	7811914	3 R(01 D	E014190-07A1S1	XU, HUAKUN			2009	DE	Injectable	DESCRI	A. SPECI	\$416,624	Awarded.	UNIVERSIT	Y OF MAR	YLAND BALT	IMORE	
20	7581433	1 R0	01 D	K081118-01A1	SIMINOFF, LAU	RA A.		2009	DK	A Randor	DESCRI	A. Speci	\$546.293	Awarded.	VIRGINIA O	OMMONW	ALTH UNIV	ERSITY	
21	8020287	1 0/	11	N1 400 40 01 N0	DANI DINIO VIN	in n		2011	0	LISO Daris		A Speci	\$251 712	Awordod	TO A LIN COL				т

In this example you could also use project number to match the same information across using these datasets. The formula to match on Institution would be:

=vlookup(D2,[Transplant_Inst_Status_data.xlsx]Data!\$B\$1:\$F\$2060,5,false)



Note we're now using column D to identify the value to look up and the array has changed to columns B to F.

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2	7907700	2 R01	HL075353-06	MESSINA, LOUIS MICHAEL	2010 HL	Mesenchy	DESCRI	T L spe	\$411,200	Awarded.	UNIV OF MASSACHUSETTS	MEL = VLOOKOP(D	02,[Transplant_Inst		
3	0430690	1 821	AD0(14(0.01A)	LIBONAII, JOSEPH ROCCO (Confdct); MARGULI	2013 HL	Exercise d	DESCR	A. spec	\$200,000	Awarded.	UNIVERSITY OF PENNSYLV	AND UNIVERSITY	UP PENNSTLVANIA	NARK	
4	0240000	1 801	AR061460-01A1	FISHER, JOHN P.	2011 AR	Applicatio	DESCRI	II. SPECI	\$300,240	Awarded.	UNIV OF MARTLAND, COLL	GE UNIV OF MAR	OF CINCINNATI	AKK	
0	01070/6	1 001	E1021760-01		2011 ET	Cell merc	DESCRI	P.I. KOO	\$030,406	Awarded.	CINCINNATI CUILDRENS UC	I UNIVERSITY	OF CINCINNA 11	IED CTD	
7	0400210	1 1119	DR095001-01A1		2012 DK	Medeling	DESCR	SPECIFIC	\$333,020	Awarded.	UNTVERSITY OF DENNSYLV	SP I CINCINNATI C	OF DENNEYLVANIA	EDCIK	
-	7/70045	1 010	DK0000000-01	LINCH, JOHN F.	2012 IR	Aporthuor	DESCR	1 SDECIFIC	\$375,600	Awarded.	DIODED TECHNOLOGIES IN		OF PENNSTLVANIA	•	
0	0100070	1 001	UK003032-01		2007 DK	Ripproport	DESCRI	1. SPECIF	\$100,000	Awarded.	STATE UNIVERSITY OF NEX		DOLUGIES, INC.		10
10	9504212	1 801	DK009797 01		2011 FL	Culturally	DESCRI	2 SPECIE	\$017,711	Awarded.	UNIVERSITY OF WASHINGT		OF WACHINGTON	JAK AT BUFFA	10
11	9609306	1 801	DK070707-01	CALLACT IONN I	2012 DK	Alcohol F	DESCR	2. SPECIE	\$217,002	Awarded.	LOVOLA UNIVERSITY CHIC	COLOXOLA UNIT	(EPSITY CHICAGO		
12	7581820	2 801	AI0521220-01A1	DIDDELL STANLEY R	2013 ///	CD8+ T C	DESCR	2. SPECIE	\$500.440	Awarded.	EDITOLA UNIVERSITI CHICI		NEON CANCER RES	CEARCH CENTS	CD
12	7721108	1 801	CA124551 01A1	RIDDELL, STANLEY R. (contact): IENISENI MICHA	2007 A	Targeted	DESCRI	2. SPECIE	\$551.542	Awarded.	ERED HUTCHINSON CANCER		INSON CANCER RES	SEARCH CENTE	CD
14	8271082	2 801	DK079712.04	ADDIOLA KIMPEDI Y DUTU JACOR	2007 CA	Project Ar	DESCR	2. Specif	\$240,878	Awarded.	EMORY LINIT/ERSITY	EMORY LINIT	EDCITY	JEARCH CENTE	21
15	7735633	2 R01	AI052079-05A2	KEAPNS-IONKER MARY K	2009 41	Non-Hum	DESCRI	2. Specif	\$400.000	Awarded	CHILDREN'S HOSPITAL OF L	OS CHILDREN'S H		ANGELES	
16	8591825	1 R41	OD018403-01	MARSH HENRY (contact): YIL IIANHIIA	2013 OD	CDX-301 (DESCR	2.2 SPEC	\$100,000	Awarded	CELLDEX THERAPELITICS I		RAPELITICS INC	ITOLLU	
17	7785204	1 R01	NS065109-01A1	BELLAMKONDA RAVLV	2009 NS	A Rationa	DESCRI	A Ration	\$338,926	Awarded	GEORGIA INSTITUTE OF T	CHI GEORGIA INS	TITUTE OF TECHN	IOLOGY	
18	7741820	1 R01	DK083411-01A1	LIN FANGMING	2009 DK	STEM CELL	DESCRI	a Specif	\$376.800	Awarded	UT SOUTHWESTERN MEDI	AL UT SOUTHWE	ESTERN MEDICAL (CENTER	
19	7811914	3 R01	DE014190-07A1S1	XII. HIJAKUN	2009 DE	Injectable	DESCRI	A SPECI	\$416.624	Awarded.	LINIVERSITY OF MARYLAND	BA LINIVERSITY	OF MARYLAND BAL	TIMORE	
20	7581433	1 R01	DK081118-01A1	SIMINOFE, LAURA A.	2009 DK	A Randor	DESCRI	A. Specif	\$546.293	Awarded.	VIRGINIA COMMONWEALTH	UN VIRGINIA COL	MONWEALTH UN	IVERSITY	
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More help

Click in the formula box, on 'vlookup', this will bring up the pop up box shown below with a hyperlink to the Excel VLOOKUP help text.

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3	8435690	1 R21	HL113777- LIBONATI,	2013 HL	Exercise a	DESCR A. Sp	ec \$200,000								
4	8245505	1 R01	AR061460 FISHER, JC	2011 AR	Applicatic I	DESCRI II. SPE	CI \$355,245								
5	8159876	1 R01	EY021768- KAO, WIN	2011 EY	Cell Therc	DESCRI P.I. K	ao \$530,406								
6	8400215	1 R01	DK095001 MIETHKE, /	2012 DK	The role o	DESCR SPEC	IFIC \$333,825								
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8	7672945	1 R43	DK083832 POO, RAN	2009 DK	A perfluor	DESCRI 1. SPE	CIF \$100,000								
9	8108873	1 R01	HL103709-TZANAKAK	2011 HL	Bioproces	DESCRI 1. SPE	CIF \$379,711								
10	8504313	1 R01	DK098787 BUCHWAL	2012 DK	Culturally	DESCR 2. SPE	CIF \$211,602								
11	8508395	1 R21	AA021225 CALLACI,	2013 AA	Alcohol E	DESCR 2. SPE	CIF \$217,063								
12	7581820	2 R01	AI053193-(RIDDELL, \$	2009 AI	CD8+TC	DESCRI 2. SPE	CIF \$502,469								
13	7731198	1 R01	CA136551 RIDDELL, \$	2009 CA	Targeted I	DESCRI 2. SPE	CIF \$551,563								
14	8371082	2 R01	DK079713 ARRIOLA,	2012 DK	Project A	DESCR 2. Spe	cif \$240,878								
15	7735633	2 R01	AI052079-(KEARNS-J(2009 AI	Non-Hum	DESCRI 2. Spe	cif \$400,000								
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