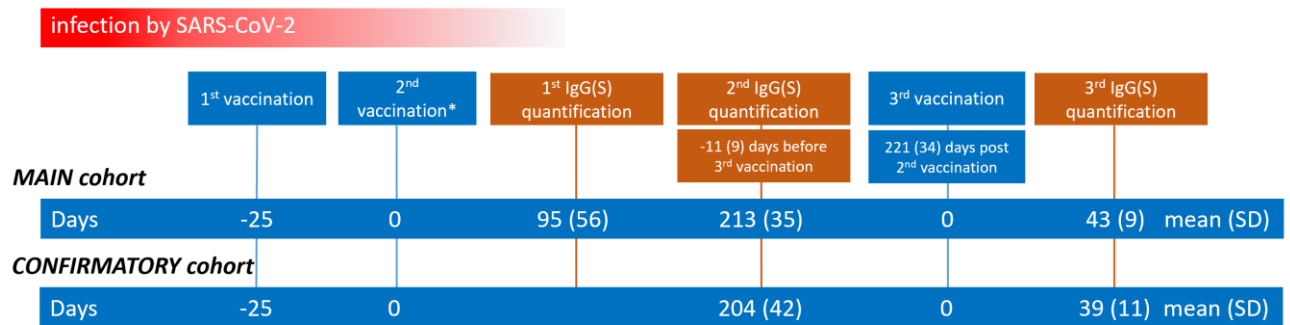


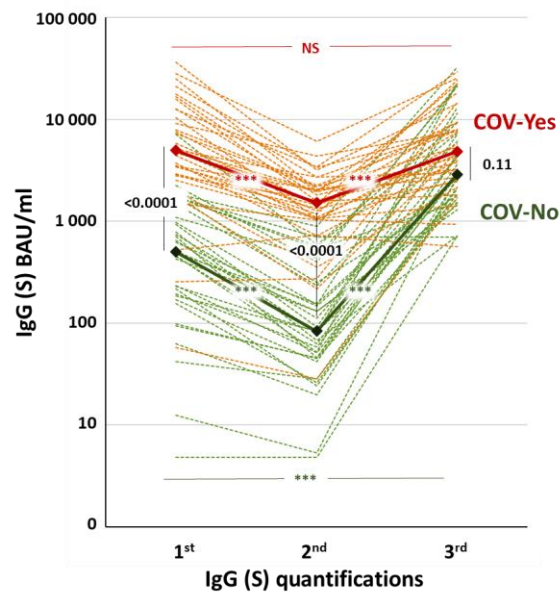
**Supplemental Figure 1:** Number of days between the 2<sup>nd</sup> vaccination\* and the 1<sup>st</sup> and 2<sup>nd</sup> IgG(S) quantifications or the number of days between the 3<sup>rd</sup> vaccination and the 3<sup>rd</sup> IgG(S) quantification in the Main and Confirmatory cohorts



\* For the 27 subjects who had SARS-CoV-2 infection a few days after the 2<sup>nd</sup> vaccination (see legend Figure 1), time to positive RT-PCR was taken into account in lieu of the 2<sup>nd</sup> vaccination.

### Supplemental Figure 2:

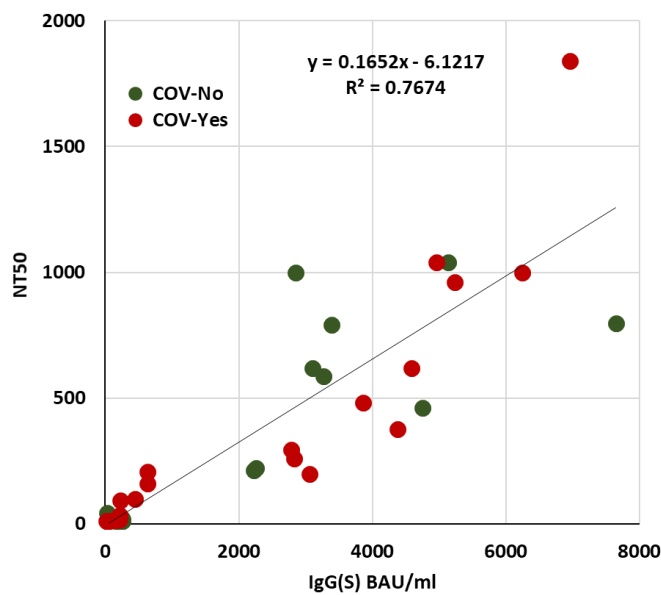
Evolution of the individual IgG(S) levels in the Main cohort in COV-Yes (red, n=35) and COV-No (green, n=34) residents having all 3 IgG(S) quantifications. Median values are in bold lines. The 1<sup>st</sup> IgG(S) quantification was performed after the 2<sup>nd</sup> vaccination, the 2<sup>nd</sup> IgG(S) quantification was performed just before the 3<sup>rd</sup> vaccination and the 3<sup>rd</sup> IgG(S) quantification was performed after the 3<sup>rd</sup> vaccination.



These data show that in the COV-No group, the response to the 3<sup>rd</sup> vaccination (3<sup>rd</sup> quantification) was significantly higher than the response to the 2<sup>nd</sup> vaccination (1<sup>st</sup> quantification), whereas no such difference was observed in the COV-Yes group. Since the time delay between the last immunization and IgG quantification differed in the 1<sup>st</sup> (mean 95 days) and 3<sup>rd</sup> IgG quantifications (mean 43 days) (see Figure 1), these values were adjusted for this time delay taking into account the IgG waning model (exponential) described in the result's section (see Table 2). This analysis confirmed a significant amplification in the IgG(S) response following the 3<sup>rd</sup> vaccination in the COV-No subjects ( $p < 0.001$ ) but no difference between the 2<sup>nd</sup> and 3<sup>rd</sup> vaccinations (1<sup>st</sup> and 3<sup>rd</sup> quantifications) in the COV-Yes individuals ( $p = 0.55$ ). Subjects having IgG(S) values  $> 2080$  BAU/mL and for whom further dilutions could not be performed to obtain an exact IgG quantification ( $n = 14$ ) were excluded from this analysis (no possibility to calculate changes in absolute values between the 3 IgG(S) quantifications). \*\*\*  $P < 0.0001$  (t-paired test between the different quantification in each group) and T test for comparison between COV-No vs COV-Yes in the main cohort.

### Supplemental Figure 3:

Seroneutralization activity (NT50) according to IgG(S) levels in sera from subjects with (COV-Yes) or without (COV-No) history of prior SARS-CoV-2 infection (upper panel) and multivariate regression analysis to explain variations in seroneutralization activity according to IgG(S) levels (post-second vaccination) and presence of history of SARS-CoV-2 (lower panel).



#### Multivariate regression

Dependent Variable: NT50

	Beta (SE)	R <sup>2</sup>	P
IgG (1 BAU/mL)	0.1765 (0.015)	75.6%	<0.0001
COVID (yes)	-1.404 (68.758)	0.0%	0.98
Model		76.7%	<0.0001

The strong positive relationship found between IgG(S) levels and neutralization activity (NT50) using a Pearson bivariate analysis was confirmed in the multivariate regression analysis. This multivariate analysis showed no influence of the SARS-CoV-2 status on the seroneutralization activity.

**Supplemental Table 1:**

Number of residents per Nursing home, in the Main and the Confirmatory cohorts

Nursing Homes	Cohort		Total
	Main	Confirmatory	
Benichou Nancy		44	44
Le Clos Pré Saint Max		20	20
Einville au Jard	4	14	18
Hôtel Club Saint Max		74	74
Joudreville les Bruyères		40	40
L'Oseraie Laxou		30	30
Pompey Lay Saint Christophe	44	62	106
Résidence le Parc	5	44	49
Pont-à-Mousson		43	43
Les Sablons Pulnoy	18	46	64
Sainte Sophie Thiaucourt		22	22
USLD CHRU Nancy	44	20	64
<b>Total</b>	<b>115</b>	<b>459</b>	<b>574</b>