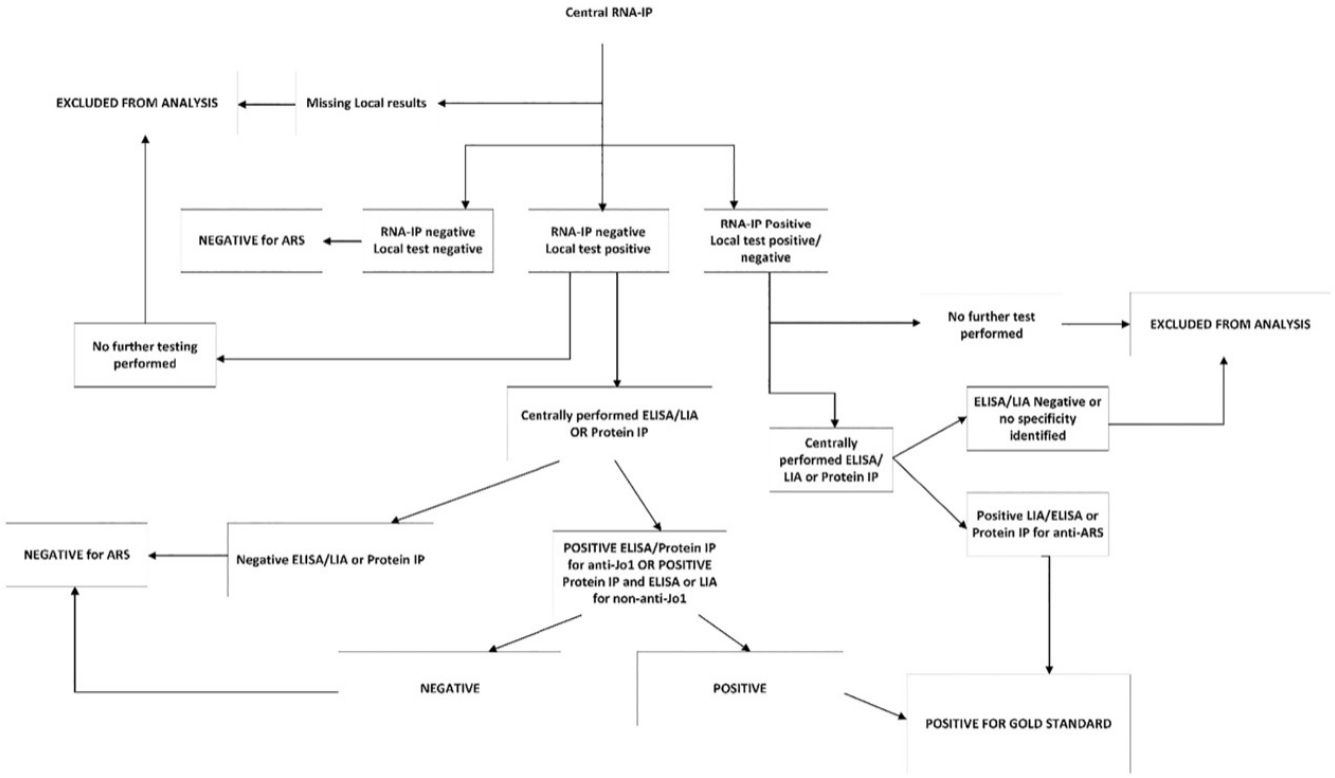

Supplementary Fig. S1. Highlighting decision-making matrix in deciding which secondary confirmation testing.

Supplementary Table S1. Breakdown of ASSD antibodies that were excluded due to missing data.

Samples excluded due to missing local data ***Central testing results (n=84)***	
ARS antibody	***Number***
Jo1	1
PL7	3
PL12	4
EJ	3
OJ	0
KS	0
Zo	0
ARS Negative	73
Samples excluded due to missing central data ***Local Testing Results (n=79)***	
ARS Antibody	***Number***
Jo1	29*
PL7	8
PL12	13*
EJ	2
OJ	4
KS	2
Zo	1
ARS Negative	21

Supplementary Table S2. Breakdown of the utilisation and performance of local testing based on the geographical location of assays randomly selected to undergo central immunoprecipitation.

Antibodies	Local (n)	Central (n)	Sensitivity (%)	Specificity (%)	PPV	NPV	Inter-rater agreement Weighted ϰ
Europe n= 457					**LIA = 76.4%**	**ELISA = 12.2%**	**IP = 2% Other = 9.4%**
ASSD (combined)	188	171	94.7	90.9	0.86	0.97	0.84 (95%CI 0.79-0.89)
Jo1	120	124	96.7	100	1	0.99	0.98 (95%CI 0.96 – 1)
Non-Jo1	68	47	80.9	92.7	0.56	0.98	0.61 (95%CI 0.5 – 0.72)
PL-7	27	17	76.5	96.8	0.48	0.99	0.57 (95%CI 0.39-0.75)
PL-12	19	24	84.2	98.2	0.67	0.99	0.73 (95%CI 0.58 – 0.88)
EJ	9	13	66.7	98.4	0.46	0.99	0.53 (95%CI 0.28 – 0.79)
OJ	3	0	n/a	99.3	n/a	1	-
KS	2	2	0	99.6	0	0.99	-0.004 (95%CI -0.008 -0)
Zo	0	0	-	-	-	-	-
	Local (n)	**Central (n)**	**Sensitivity (%)**	**Specificity (%)**	**PPV**	**NPV**	**Inter-rater agreement Weighted ϰ**
North America n = 48					**LIA = 4.2%**	**ELISA = 45.8%**	**IP = 27.1% Other = 22.9%**
ASSD (combined)	36	35	100	92.3	0.97	1	0.95 (95%CI 0.84 - 1)
Jo1	33	34	97.1	100	1	0.93	0.95 (95%CI 0.85 – 1)
Non-Jo1	4	1	100	93.6	0.25	1	0.38 (95%CI -0.15 – 0.9)
PL-7	0	0	-	-	-	-	-
PL-12	3	1	100	95.7	0.33	1	0.48 (95CI% -0.11 - 1)
EJ	1	0	n/a	97.9	0	1	-
OJ	0	0	-	-	-	-	-
KS	1	0	n/a	97.9	n/a	1	-
Zo	0	0	-	-	-	-	-
	Local (n)	**Central(n)**	**Sensitivity (%)**	**Specificity (%)**	**PPV**	**NPV**	**Inter-rater agreement Weighted ϰ**
South America n= 30					**LIA = 86.2%**	**ELISA = 10.3%**	**IP = 0% Other = 3.5%**
ASSD (combined)	26	24	100	66.7	0.92	1	0.76 (95%CI 0.45 - 1)
Jo1	12	11	100	100	1	1	1 (95%CI 1 - 1)
Non-Jo1	15	13	92.3	82.3	0.8	0.93	0.73 (95%CI 0.49 – 0.97)
PL-7	3	2	100	94.6	0.67	1	0.78 (95%CI 0.37 - 1)
PL-12	9	6	100	87.5	0.67	1	0.74 (95%CI 0.46 - 1)
EJ	4	5	80	100	1	0.96	0.87 (95%CI 0.62 – 1)
OJ	0	0	-	-	-	-	-
KS	0	0	-	-	-	-	-
Zo	0	0	-	-	-	-	-
	Local (n)	**Central (n)**	**Sensitivity (%)**	**Specificity (%)**	**PPV**	**NPV**	**Inter-rater agreement Weighted ϰ**
Japan n= 48					**LIA = 2.1%**	**ELISA = 27.1%**	**IP = 70.8% Other = 0%**
ASSD (combined)	28	25	96	82.6	0.86	0.95	0.79 (95%CI 0.62-0.96)
Jo1	9	10	90	100	1	0.97	0.93 (95%CI 0.81 -1)
Non-Jo1	19	15	93.3	84.8	0.74	0.97	0.73 (95%CI 0.53 – 0.93)
PL-7	1	0	-	-	-	-	-
PL-12	4	5	80	100	1	0.98	0.88 (95%CI 0.64-1)
EJ	11	10	100	97.4	0.91	1	0.94 (95%CI 0.82- 1)
OJ	1	0	n/a	97.9	n/a	1	-
KS	2	0	n/a	95.8	n/a	1	-
Zo	0	0	-	-	-	-	-
	Local (n)	**Central (n)**	**Sensitivity (%)**	**Specificity (%)**	**PPV**	**NPV**	**Inter-rater agreement Weighted ϰ**
India n= 41					**LIA = 100%**	**ELISA = 0%**	**IP = 0% Other = 0%**
ASSD (combined)	16	15	93.3	92.3	0.88	0.96	0.84 (95%CI 0.68-1)
Jo1	12	12	100	100	1	1	1 (95%CI 1-1)
Non-Jo1	4	3	66.7	94.7	0.5	0.97	0.53 (95% CI 0.07 – 0.99)
PL-7	1	2	0	97.4	0	0.95	-0.03 (95%CI -0.1 - 0.01)
PL-12	3	2	50	94.9	0.33	0.97	0.36 (95%CI -0.2 - 0.92)
EJ	0	0	-	-	-	-	-
OJ	0	0	-	-	-	-	-
KS	0	0	-	-	-	-	-
Zo	0	0	-	-	-	-	-

Supplementary Table S3. Double positive results for anti-ARS with the testing method used.

Antibodies double positive	Local/central test	Testing method
Anti-PL7/EJ	Local	Line blot
Anti-PL7/PL12	Local	Line blot
Anti-Jo1/KS	Local	Unknown
Anti-PL12/EJ	Local	Immunoprecipitation
Anti-PL7/PL12	Local	Line blot
Anti-Jo1/PL12	Local	Line blot
Anti-PL7/PL12	Central	ELISA

Supplementary Table S4. False positive and false negative rates of included ARS antibodies in the final analysis.

	Local Detection n, (%)	Central Detection n, (%)	False Positive Rate (%)	False Negative Rate (%)
Combined Testing n= 624				
ARS Combined	294 (47.1)	270 (43.3)	9.9	4.1
Jo1	186 (29.8)	191 (30.6)	0.2	3.1
Non-Jo1	110 (17.6)	79 (12.7)	7.9	15.2
PL7	32 (5.1)	21 (3.4)	2.8	28.6
PL12	44 (7.1)	33 (5.3)	2.7	15.2
EJ	29 (4.6)	24 (3.8)	1.5	16.7
OJ	4 (0.6)	0	0.6	-
KS	5 (0.8)	2 (0.3)	0.8	100
Zo	0	0	-	-
Local LIA n=419				
ARS Combined	184 (43.9)	166 (39.6)	10.3	4.8
Jo1	109 (26)	112 (26.7)	0.3	2.7
Non-Jo1	75 (17.9)	54 (12.9)	8.2	16.7
PL7	27 (6.4)	20 (4.8)	3.3	30
PL12	33 (7.9)	21 (5)	3.5	9.5
EJ	15 (3.6)	13 (3.1)	1.5	30.8
OJ	2 (0.5)	0	0.5	-
KS	1 (0.2)	1 (0.2)	0.2	100
Zo	0	0	-	-
Local ELISA n= 219				
ARS Combined	56 (60.9)	55 (59.8)	8.1	3.6
Jo1	47 (51.1)	47 (51.1)	0	0
Non-Jo1	9 (9.8)	8 (8.7)	3.6	25
PL7	1 (1.1)	0	1.1	-
PL12	4 (4.3)	5 (5.4)	1.1	40
EJ	3 (3.3)	2 (2.2)	1.1	0
OJ	1 (1.1)	0	1.1	-
KS	0	1 (1.1)	0	1
Zo	0	0	-	
Local IP n = 56				
ARS Combined	31 (55.3)	28 (50)	14.3	3.6
Jo1	10 (17.9)	13 (23.2)	0	23.1
Non-Jo1	21 (37.5)	15 (26.8)	17.1	6.7
PL7	2 (3.6)	0	3.6	-
PL12	5 (8.9)	6 (10.7)	0	16.7
EJ	11 (17.9)	9 (16.1)	4.3	0
OJ	1 (1.8)	0	1.8	-
KS	3 (5.4)	0	5.4	-
Zo	0	0	-	-
Local Other Testing Methods n = 57				
ARS Combined	23 (40.4)	21 (36.8)	5.6	0
Jo1	19 (33.3)	19 (33.3)	0	0
Non-Jo1	5 (8.8)	2 (3.5)	5.5	0
PL7	2 (3.5)	1 (1.8)	1.8	0
PL12	2 (3.5)	1 (1.8)	1.8	0
EJ	0	0	-	-
OJ	0	0	-	-
KS	1 (1.8)	0	1.7	-
Zo	0	0	-	-

Supplementary Table S5. Contributing centres and site principal investigators for the CLASS Project.

Contributing centres of serum samples to CLASS Project	
Centres	**Site PI**
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Hospital General Universitario of Alicante, Spain	Vega Jovani
Hospital Universitario Ramon y Cajal, Madrid, Spain	Javier Bachiller-Corral
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Hospital Clínico Universitario de Santiago de Compostela, Spain	Antonio Mera-Varela
University of Pittsburgh, USA	Siamak Moghadam-Kia
Instituto Nacional del Torax, Chile	Veronica Wolff
HP Metz, Hopital Belle-Ile, Metz, France	Julien Campagne
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University Clinic and AOU of Cagliari, Italy	Matteo Piga
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University of Western Ontario, Canada	Pari Basharat
Peking Union Medical College Hospital, Peking Union Medical College & Chinese Academy of Medical Sciences, China	Qian Wang
Universidad Nacional de Colombia/Fundacion Santa fe de Bogota, Colombia	Gerardo Quintana
CHU Lyon, France	Laure Gallay
Bichat-Claude Bernard Hospital, France	Esther Ebstein
Medical Center Baden-Baden, Germany	Christopher Fiehn
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Participating centres within CLASS Project

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IRCCS ASMN Reggio Emilia, Italy	Nicolò Pipitone
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University of California, Los Angeles, USA	Christina Charles-Schoeman
Vanderbilt University Medical Center, USA	Erin Wilfong
Northwell Health, USA	Galina Marder
North Bristol NHS Trust, UK	Harsha Gunawardena
Oregon Health and Science University, USA	Daniela Ghetie