Supplementary Appendix

Case Number	Age	Gender	Clinical	PCR	Antibody	Symptoms	Known or Likely Exposure	Contact with similar rash	Date of rash	Initial Labs	Date of Blood Draw
1	12	M	chilblain - toes	neg	neg	no	no	no	mid April	none	8/4/2020
2	14	F	chilblain - fingers, toes	NC	neg	yes	no	no	mid February	APLS, CA, CBC, cryo, SPEP	8/6/2020
3	16	F	chilblain - toes	neg	neg	no	yes	yes	mid April	CBC	8/11/2020
4	16	M	chilblain - toes	neg	neg	yes	no	yes	early May	**ANA+ (1:320)**, neg dsDNA and Sm Ab; CBC	8/11/2020
5	27	M	chilblain - toes	neg	neg	no	no	no	mid April	none	6/30/2020
6	27	F	chilblain - fingers, toes	neg	neg	no	yes	no	late April	APLS, CA	8/25/2020
7	32	F	chilblain - toes	neg	NC	no	no	no	late May	none	6/25/2020
8	37	F	chilblain - toes	neg	NC	no	no	no	late July	ANA, CBC; **known Hep C positive**	8/26/2020
9	39	F	chilblain - toes	neg	NC	no	no	yes	late April	CBC	7/14/2020
10	39	F	chilblain - fingers	NC	NC	yes	no	no	late May	none	8/4/2020
11	40	M	chilblain - foot, toes	neg	NC	no	no	yes	late March	none	7/14/2020
12	42	F	exanthem	pos	pos	yes	yes	no	early April	CBC	8/25/2020
13	42	F	chilblain - toes	NC	NC	no	no	no	early May	none	8/4/2020
14	46	M	chilblain - fingers, knee, foot, toes	neg	neg	yes	yes	no	mid April	none	6/30/2020
15	47	F	unilateral extremity livedo	NC	NC	yes	yes	yes	mid April	**CBC w/ moderate neutropenia and reactive lymphocytes**	6/30/2020
16	47	F	chilblain - toes	pos	NC	yes	yes	no	April	CBC	8/31/2020
17	50	M	chilblain - toes	neg	NC	yes	no	no	April	CBC	6/30/2020
18	50	F	chilblain - toes	neg	neg	no	yes	yes	early May	**ANA+ (1:40)**; CBC	8/4/2020
19	56	M	chilblain - fingers, toes*	neg	neg	no	yes	yes	late April	none	8/4/2020
20	56	F	chilblain - toes	neg	neg	no	no	no	late April	**low + IgM Phosphatidylserine Ab, low + IgM Cardiolipin Ab**; ANA	8/4/2020
21	61	F	chilblain - toes	NC	NC	no	no	no	late April	none	8/4/2020
22	61	F	acral/extremity chilblain*	NC	neg	no	no	no	early May	**CBC w/ leukopenia**; ANA, APLS	8/4/2020
23	82	F	chilblain - fingers*	neg	neg	no	no	no	March	CBC	8/13/2020

Table S1: Expanded clinical information on PC cohort. Definitions of clinical survey questions and reporting are described individually below. **Symptoms**: defined as preceding 2 months with symptoms suggestive of COVID-19 infection including fever, cough, SOB, recent change in sense of smell or taste. **Exposure:** defined as preceding 2 months exposure to someone with symptoms attributable to COVID-19 or a person with known positive covid test. **Contact with similar rash**: defined as preceding 2 months with exposure to someone with a rash attributed to COVID-19 infection (positive instances were chilblains or livedo reticularis). **Exclusion criteria**: history of chilblains or cutaneous lupus erythematosus. Values listed in red in the Initial Labs column indicate positivity/abnormality; otherwise text in black indicates normal values. *biopsy performed; histopathology consistent with chilblains including dermal edema and perivascular lymphocytic inflammation. Additional ANA testing was performed on 22 samples (all except PC #16) using ANA Kit (Antibodies Incorporated) with sera diluted 1:160; no new positive ANA values were observed. Ab = antibody; ANA = antinuclear antibody; APLS = anti phospholipid syndrome; CA = cold agglutinin; CBC = complete

blood count; cryo = cryoglobulins; dsDNA = double stranded DNA; Sm = Smith; SPEP = serum protein electrophoresis.

	COVID Diagnosis Date	Time since infection	COVID Diagnosed By	Hospitalized For COVID	RBD ELISA (cut off 0.28)	SERA IgG (cut off 25)	SERA IgM (cut off 25)
MC 1	12/22/2020	4 months post infection	Blood test (antibody test)	No	0.53	34.7	10.7
MC 2	5/28/2020	1 year post infection	Nasal swab (PCR/RNA/NAT)	No	1.45	58.9	14.2
MC 3	3/13/2020	1.5 month postsymptom onset	PCR	No	1.080	61.2	128.6
	3/13/2020	4 months postsymptom onset	PCR	No	1.088	40.7	68.2
	3/13/2020	6 months postsymptom onset	PCR	No	0.983	49.2	48.8
	3/13/2020	9 months postsymptom onset	PCR	No	0.588	34.8	58.7

Table S2: Additional SERA positive controls. Three different individuals with mild prior SARS-CoV-2 infection (mild covid, or MC) demonstrating that ELISA and SERA assays can detect prior infection for up to a year after initial diagnosis. MC #3 has four different time points collected starting from 1.5 months to 9 months after diagnosis. NAT = nucleic acid amplification test; PCR = polymerase chain reaction; RBD = receptor binding domain; SERA = serum epitope repertoire analysis.

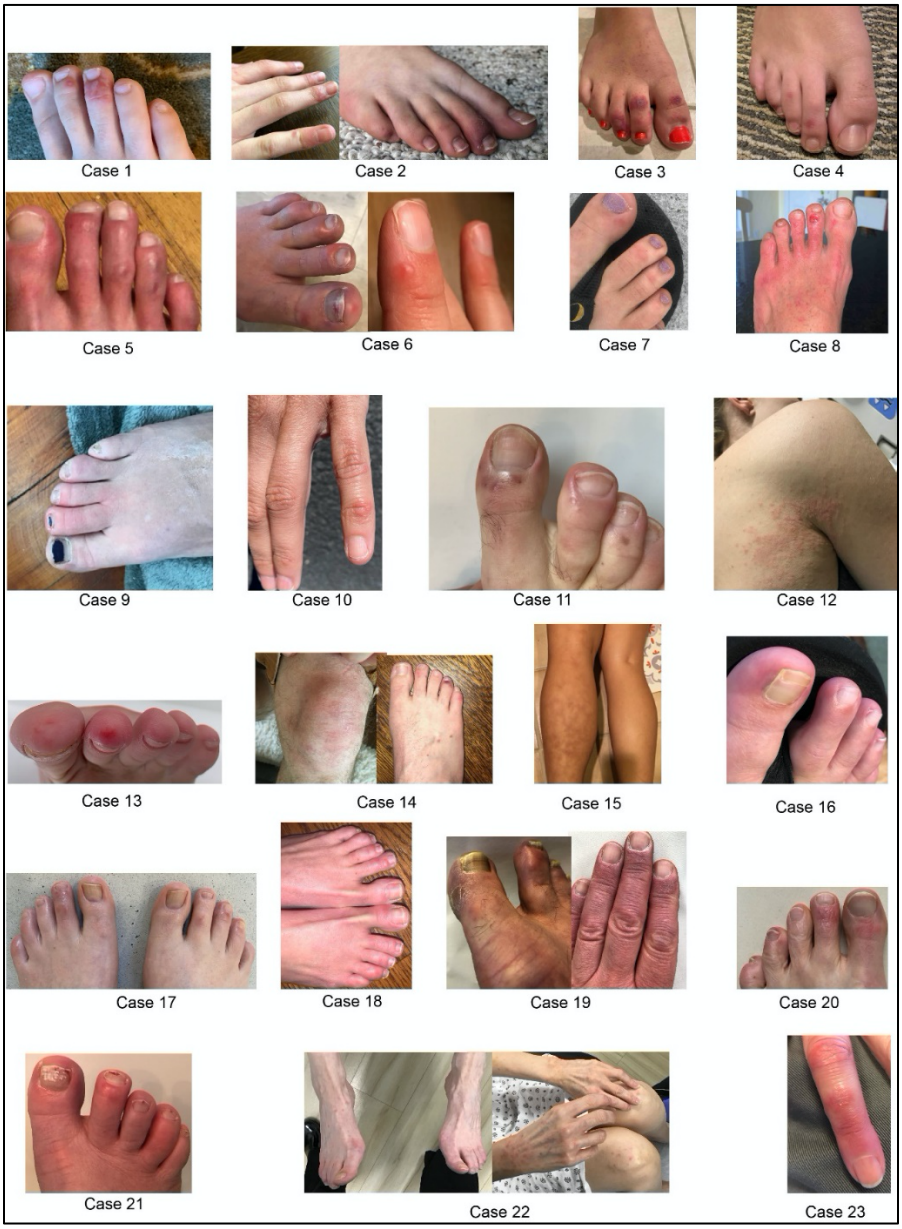

Figure S1: Clinical photographs of all cases included in PC cohort. 21 of 23 cases were considered chilblains incorporating both clinical and histopathologic studies (when available). Case 12 was an exanthem in the setting of acute COVID-19 disease (patient was hospitalized). Case 15 was unilateral livedo reticularis. All classes of eruptions have a published association with SARS-CoV-2.

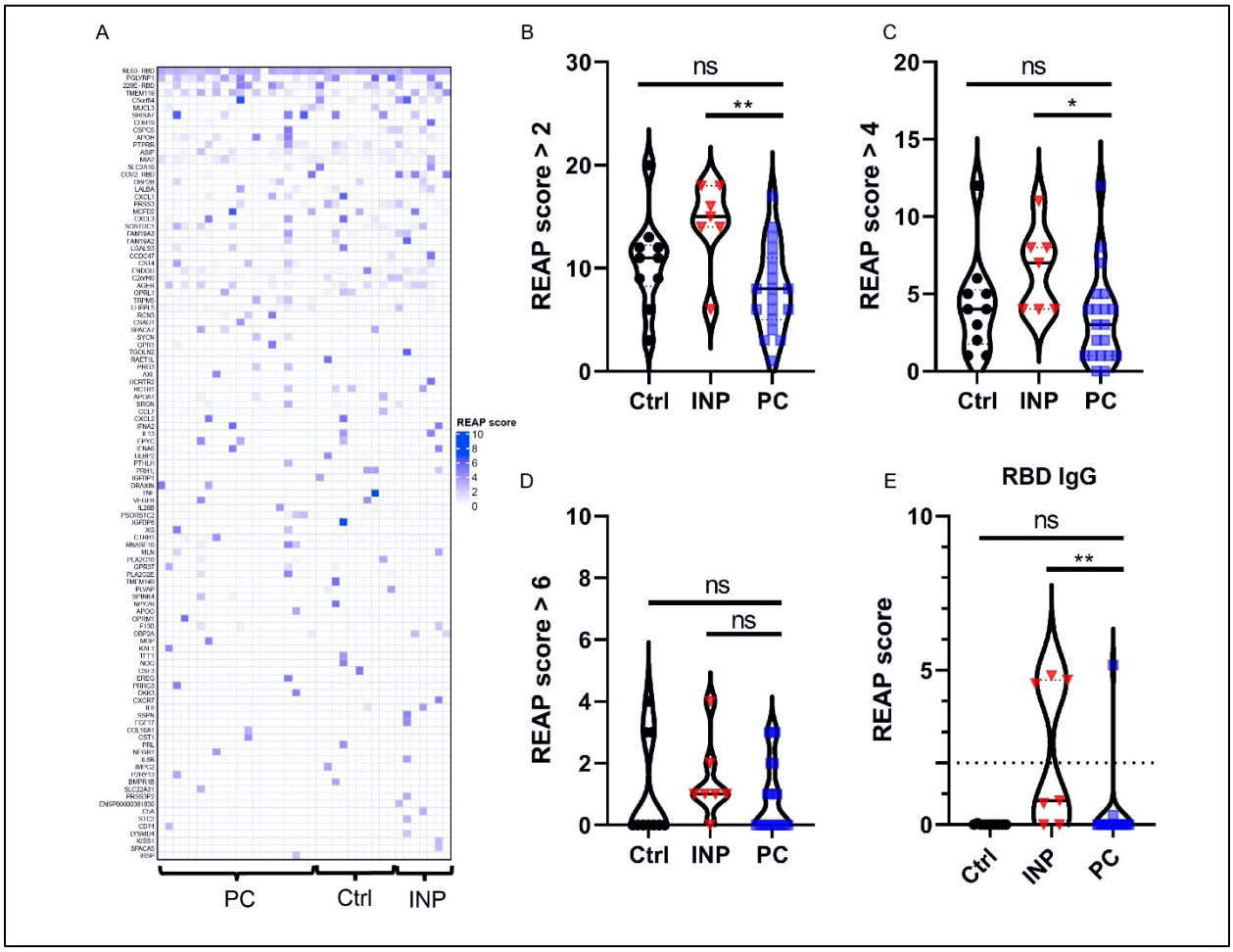

Figure S2: REAP analysis of PC cohort compared to controls. A) Heatmap of REAP IgG results comparing 22 PC cases, 10 healthy controls, and 7 moderate severity inpatients. B, C, and D) Violin plots of PC cases (22) compared to Ctrl (10) and INP (7) cases. For visualization purposes cases with values 3 SD above the median were removed, resulting in removal of 1 PC case in B. E) REAP testing of RBD antigen; no new positives were identified in PC cohort. For all experiments with significance testing, Kruskal-Wallis test with post-hoc Dunn's test for multiple comparisons was employed. Ctrl = no exposure negative controls; INP = moderate severity inpatients; PC

= pandemic chilblains; REAP = rapid extracellular antigen profiling; SD = standard deviation. ns, not significant; *, $P < .05$; **, $P < .01$.

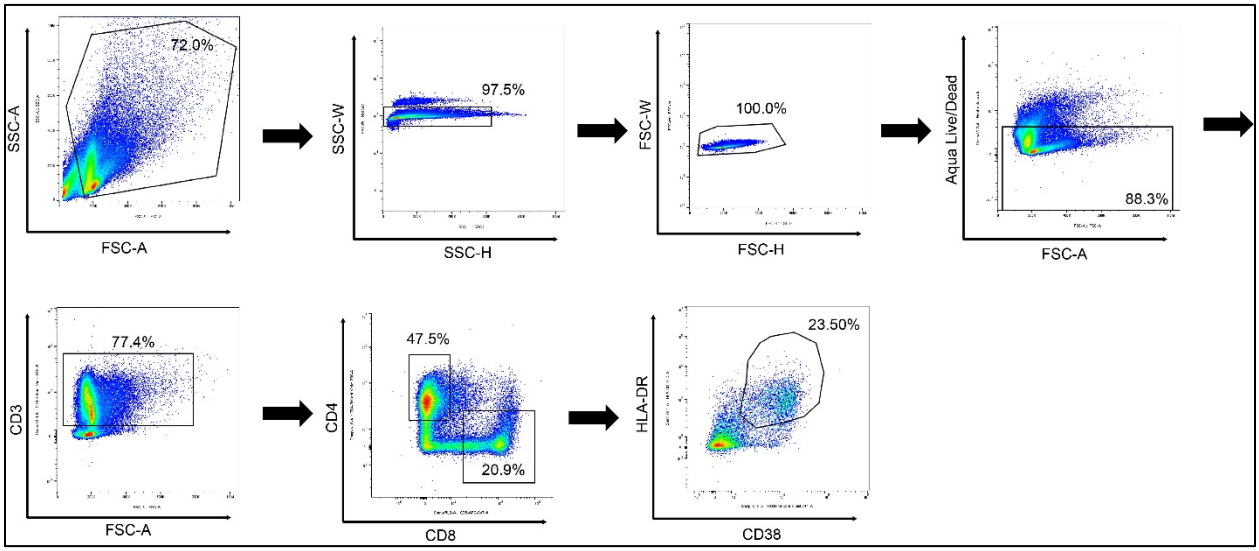

Figure S3: Flow cytometry gating strategy. Please see methods for detailed description of peptide stimulation and flow cytometry protocol.

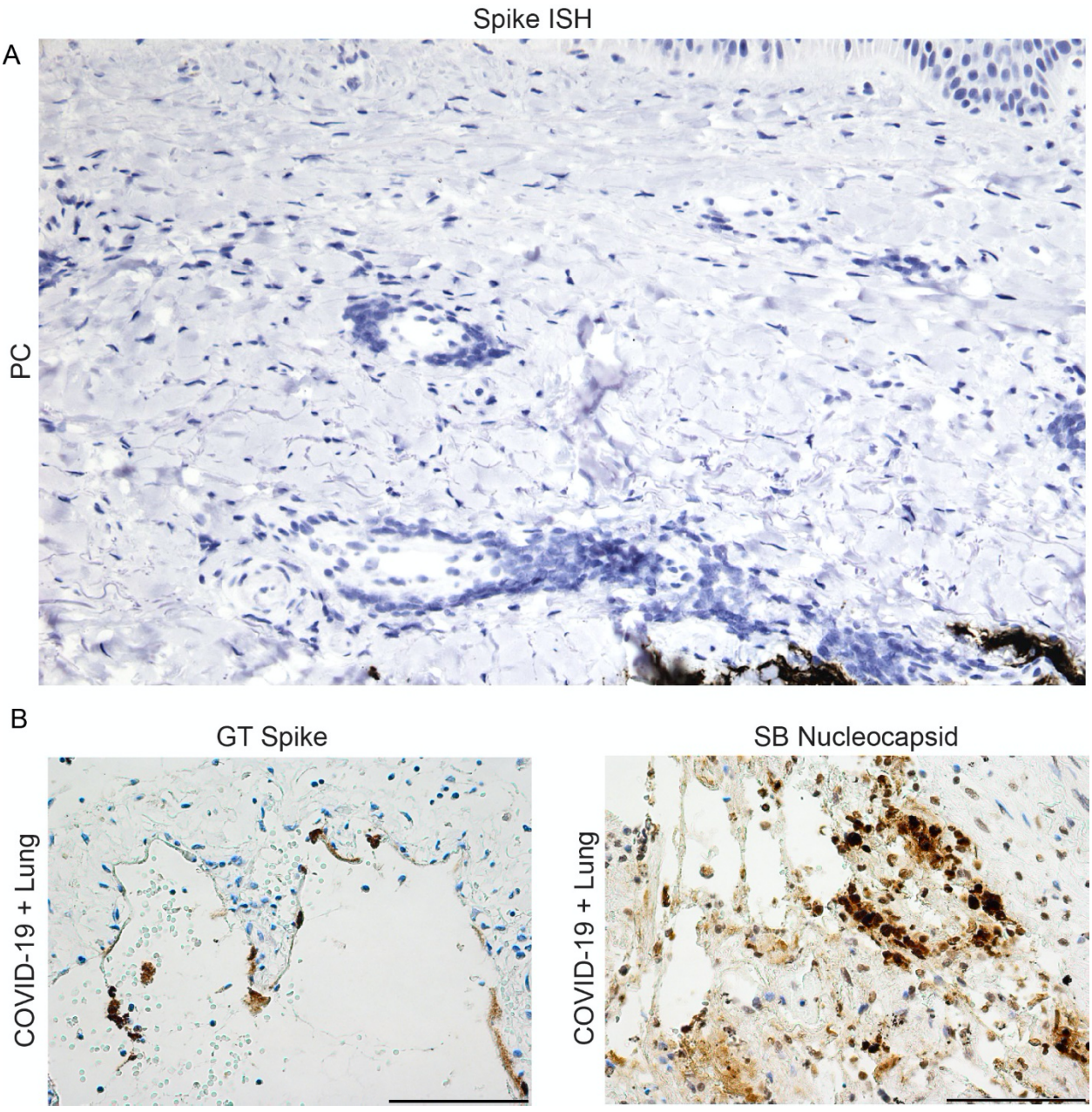

Figure S4: Additional histopathology ISH and IHC staining controls for PC and COVID-19 lung tissues. A) PC tissue stained with Spike targeted RNA in situ hybridization (ISH) probe indicating no Spike RNA present in the tissue. Contrast with the images shown in Figure 4A with staining of Spike in the endothelium and eccrine glands. B) Positive control COVID-19 lung tissues stained with the indicated antibodies;

focal staining with Spike and Nucleocapsid was observed in alveolar pneumocytes and macrophages. GT = GeneTex; SB, Sino Biologics; Scale bars = 100 uM; Image A is 200x original magnification, images in B are 400x.

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