Supplementary Table 1: Comparison between patients with AF and controls

Ref	Study population	Mapping sites	Recording site	No. patients	AF patients	AF type	Outcomes			
							Parameter	Control	AF group	P-value
Teuwen[1] (2016)	CAD	BB	Epi	185	13	PAF	CB	0.9 [0–12.8] %	3.2 [0–11.6] %	0.03
							Longitudinal CB	4.0 [90–11.7] %	1.1 [0–12.8] %	0.03
							Transverse CB	1.0 [0–12.8] %	1.9 [0–12.3] %	0.03
							Longitudinal CB	2 mm	8 mm	0.03
					56	DN PoAF	>4% CB	OR 3.1 [1.2–8.1]		0.02
							≥12 mm longitudinal CB	OR 2.9 [1.1–8.2]		0.04

Mouws[2] (2018)	CAD MVD AVD	PVA	Epi	327	47 14 1	PAF PsAF LPsAF	CD ≥6 mm CB ≥6 mm CDCB ≥16 mm	OR 2.29 [1.18–4.44] OR 2.04 [1.09–3.83] OR 2.06 [1.08–3.93]		0.014 0.027 0.029
Sakamoto[3] (2006)	CAD MVD AVD ASD	RA	Epi	52	21	PoAF	CD/CB/mosaic activation	N=3 [9%]	N=13 [61%]	<0.001
Kharbanda[4] (2020)	CAD MVD AVD	RA	Endo-epi	80	25 4 2 30	PAF PsAF LPsAF PoAF	Endo-epicardial CB Continuous CDCB Median length CDCB Max length CDCB	0.8 [0.2–2.0] % 1.0 [0.2–3.5] % 8 [0–12] mm 12 [6–22] mm	3.9 [1.9–5.9] % 6.5 [3.7–11.5] % 15.5 [11.5–20.25] mm 28 [21–54.5] mm	0.007 0.001 0.005 0.004

Van Staveren[5] (2021)	CAD VHD CHD	BB	Epi	54	0	-	Max length CB	2 [2–28] mm	18 [2–164] mm	0.031
Mouws[6] (2019)	CAD MVD AVD	PVA	Epi	268	38 11	PAF PsAF	Continuous CDCB	N=132 [60%]	N=37 [76%]	0.046
							CD	4 [0–22]	7 [0–30]	<0.001
							CB	1 [0–12]	3 [0–11]	0.003
							CDCB	1 [0–8]	2 [0–6]	0.004
							CD ≥6 mm	N=108 [49%]	N=23 [69%]	0.011
							CB ≥6 mm	N=91 [42%]	N=29 [59%]	0.025
							CDCB ≥16 mm	N=50 [25%]	N=20 [41%]	0.027
Van der Does[7] (2020)	MVD AVD	RA, BB, PVA, LA	Epi	139	38	P(s)AF	Total CDCB	2.3±2.0 %	2.7±2.3 %	0.044
							BB CDCB	2.3±4.4 %	5.9±6.4 %	<0.001
							LA CDCB	1.0±1.9 %	1.8±2.5 %	0.009

Houck[8] (2020)	CHD	RA, BB, Epi PVA, LA	31	5	PAF	BB CB	2.0 [0–10.9] %	6.3 [1.3–8.5] %	0.047
						BB max length of CB	12 [12–54] mm	34 [12–40] mm	0.041
Heida[9] (2020)	CAD MVD AVD CHD	RA, BB, Epi PVA, LA	447	52 21 2	PAF PsAF LPsAF	Max CT	45 [33–54] ms	54 [40–66] ms	0.006
						CT ≥4 ms	12.8 [10.9–14.6] %	14.9 [11.8–17.0] %	<0.001
						BB CT ≥4 ms	15.2 [11.8–19.5] %	20.5 [14.0–26.2] %	<0.001
						LA CT ≥4 ms	9.0 [6.5–11.9] %	10.0 [7.0–13.3] %	0.045
						PVA CT ≥4 ms	10.9 [8.4–14.1] %	13.4 [9.0–17.6] %	0.001
						CT ≥50 ms	N=34.4%	N=54.7%	<0.004
						BB CT ≥30 ms	N=36.0%	N=56.2%	<0.004

Lin[10] (2014)	AF, left-sided accessory pathway	LA	Endo	102	30 22 30	PAF PsAF LPsAF	TAT	75.3±5.4 ms	89.7±12.3 ms & 104.9±6.1 ms & 115.6±12.1 ms	<0.001
Zheng[11] (2017)	AF, AVNRT	RA	Endo	20	8	PAF	Total CV	83±13 cm/s	60±12 cm/s	<0.05
							Posterior CV	82±25 cm/s	54±19 cm/s	<0.05
							Septal CV	93±32 cm/s	64±20 cm/s	<0.05
							Tricuspid annulus CV	61±21 cm/s	36±22 cm/s	<0.05
Van Schie[12] (2021)	CAD MVD AVD	RA, BB, PVA, LA	Epi	412	58	PAF	BB CV	88.3 [79.3–97.2] cm/s	79.1 [72.2–91.2] cm/s	<0.001
							BB CV <28 cm/s	6.6 [3.9–11.1] %	8.3 [5.8–13.6] %	0.004
							PVA CV <28 cm/s	0.9 [0.3–1.9] %	1.4 [0.5–3.3] %	0.014

Heida[13] (2021)	CAD	RA, BB, PVA, LA	Epi	34	6	PAF	BB CV	88±11 cm/s	79±12 cm/s	0.02
	MVD				9	PsAF	Total TAT	120±22 ms	156±21 ms	<0.001
	AVD				2	LPsAF	BB TAT	58±22 ms	76±31 ms	0.03
Van Schie[14] (2020)	MVD	RA, BB, PVA, LA	Epi	67	23	PAF	BB CV	97 [70–121] cm/s	89 [62–116] cm/s	<0.001
Teh[15] (2012)	AF, left-sided accessory pathway	LA	Endo	46	17	PAF	Total AI	131±24 cm^2/s	86±17 cm^2/s & 79±15 cm^2/s	<0.001
					14	PsAF	Isthmus AI	46±28 cm^2/s	23±9 cm^2/s & 26±12 cm^2/s	0.01
							Posterior AI	49±19 cm^2/s	51±27 cm^2/s & 29±11 cm^2/s	0.02*
							Anterior AI	79±67 cm^2/s	35±7 cm^2/s & 40±14 cm^2/s	0.03
							LAA AI	42±24 cm^2/s	26±12 cm^2/s & 18±12 cm^2/s	0.003*

							Roof AI	41±19 cm^2/s	24±13 cm^2/s & 19±9 cm^2/s	0.001
							Floor AI	56±11 cm^2/s	46±22 cm^2/s & 37±9 cm^2/s	0.02*
Stiles[16] (2009)	AF, left-sided accessory pathway	RA, LA	Endo	50	25	PAF	CT	47±10 ms	57±18ms	0.01
							Total TAT	89±10 ms	128±17 ms	<0.001
							RA CV	210±50 cm/s	130±30 cm/s	<0.001
							LA CV	220±40 cm/s	120±20 cm/s	<0.001

* $p<0.05$ for comparison between both groups.

(L**)**PsAF= (longstanding) persistent atrial fibrillation; AF = atrial fibrillation; AI = activation index; AVD = aortic valve disease; BB = Bachmann's bundle; CAD = coronary artery disease; CD**(/)**CB = conduction delay and/or block; CHD = congenital heart disease; CT = conduction times; CV = conduction velocity; **(**DN**)** PoAF = (de-novo) postoperative atrial fibrillation; endo = endocardial; **epi** = epicardial; LA = left atrium; LAA = left atrial appendage; MVD = mitral valve disease; OR = odds ratio; PAF = paroxysmal atrial fibrillation; PVA = pulmonary vein area; RA = right atrium; TAT = total activation time

Supplementary Table 2: Comparison of EGM Characteristics Between Patients with AF and Controls

Ref	**Study population**	**Mapping sites**	**Recording site**	**No. patients**	AF **patients**	AF **type**	**Results**			
							Parameter	**Control**	AF **group**	**P-value**
Heida[13] (2021)	CAD MVD AVD	RA, BB, PVA, LA	Epi	34	6 9 2	PAF PsAF LPsAF	BB U-voltage p5	1.5±0.9 mV	0.9±0.6 mV	0.02
Van Schie[14] (2020)	MVD	RA, BB, PVA, LA	Epi	67	23	PAF	SP U-voltage	5.05 [2.48–7.64] mV	4.78 [2.14–7.21] mV	<0.001
							RA U S-wave predominance	88.8%	85.7%	0.021
							BB U S-wave predominance	92.3%	85.2%	0.003

							LA U S-wave predominance	41.1%	48.0%	0.013
							BB U S-wave voltage	4.08 [2.45–6.13] mV	2.94 [1.40–4.75] mV	<0.001
Teh[15] (2012)	AF, left-sided accessory pathway	LA	Endo	46	17 14	PAF PsAF	B-voltage	2.8±0.4 mV	2.2±0.4 mV & 1.8±0.3 mV	<0.001 *
							CFAE	1.8%	4.9% & 7.3%	<0.001 *
Lin[10] (2014)	AF, left-sided accessory pathway	LA	Endo	102	30 22 30	PAF PsAF LPsAF	B-voltage	3.67±0.68 mV	2.16±0.63 mV & 1.81±0.36 mV &1.48±0.34 mV	<0.001
							B-LVA index	0.78±0.10	0.95±0.20 & 0.98±0.16 & 1.11±0.19	<0.05

							B-LVA	N=0 [0%]	N=14 [46.7%] & N=12 [54.5%] & N=23 [82.1%]	<0.05
							CFAE	2.3±1.1%	5.6±3.1% & 7.7±2.5% & 13.6±9.6%	<0.05
Kogawa[1] [7] (2017)	AF	LA	Endo	36	23 13	PAF PsAF	Total B-voltage		2.50±1.66 mV & 1.58±1.35 mV	<0.001 *
							Septal B-voltage		2.06±1.48 mV & 1.03±1.07 mV	0.023*
							Roof B-voltage		2.50±1.59 mV & 1.61±0.92 mV	0.046*
							Posterior B-voltage		3.44±1.50 mV & 2.10±1.66 mV	0.007*
							RSPV antrum B-voltage		1.81±1.46 mV & 1.00±0.64 mV	0.008*

							RSPV B-voltage		1.19±0.72 mV & 0.64±0.43 mV	0.017*
							RPV carina B-voltage		1.98±1.07 mV & 1.00±0.64 mV	0.004*
							RIPV antrum		1.91±1.36 mV & 1.23±1.09 mV	0.033*
Stiles[16] (2009)	AF, left-sided accessory pathway	RA, LA	Endo	50	25	PAF	Fractionation	8±5%	27±8%	<0.001
							RA B-voltage	2.9±0.4 mV	1.7±0.4 mV	<0.001
							LA B-voltage	3.3±0.7 mV	1.7±0.7 mV	<0.001
							High-lateral RA LVA	OR 2.9 [1.4–6.3]		
							Posterior LA LVA	OR 1.7 [1.1–2.6]		
							LA roof LVA	OR 3.3 [1.8–6.3]		
Lin[18] (2005)	AF, AVNRT, AT, AFL	RA	Endo	40	10	PAF	U-peak negative	5.0% & 15.8% & 16.9%	19.0%	<0.001

							voltage >-0.28 mV			
							U-peak negative voltage	-1.34±0.22 mV & -0.90±0.40 mV & -1.00±0.36 mV	-0.85±0.35 mV	0.04
Van Schie[19] (2021)	MVD	RA, BB, PVA, LA	Epi	67	23	PAF	BB U-voltage	4.92 [3.45–6.09] mV	2.95 [2.24–4.57] mV	0.007
							BB U-LVA	1.79 [0.37–8.02] %	11.98 [2.95–21.50] %	0.001
							PVA fractionation	11.89 [9.08–17.01] %	21.70 [13.48–28.63] %	<0.001

* p<0.05 for comparison between both groups.

(L)PsAF = (longstanding) persistent atrial fibrillation; AF = atrial fibrillation; AFL = atrial flutter; AT = atrial tachycardia; AVD = aortic valve disease; AVNRT = atrioventricular nodal re-entrant tachycardia; BB = Bachmann's bundle; **B-** = bipolar; CAD = coronary artery disease; CFAE = complex fractionated atrial electrograms; endo = endocardial; epi = epicardial; LA = left atrium; LVA = low-voltage area; MVD = mitral valve disease; OR = odds ratio; PAF = paroxysmal atrial fibrillation; PVA = pulmonary vein area; RA = right atrium; **R**(**I/S**)PV = right (inferior/superior) pulmonary vein; **U-**= unipolar

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