

100

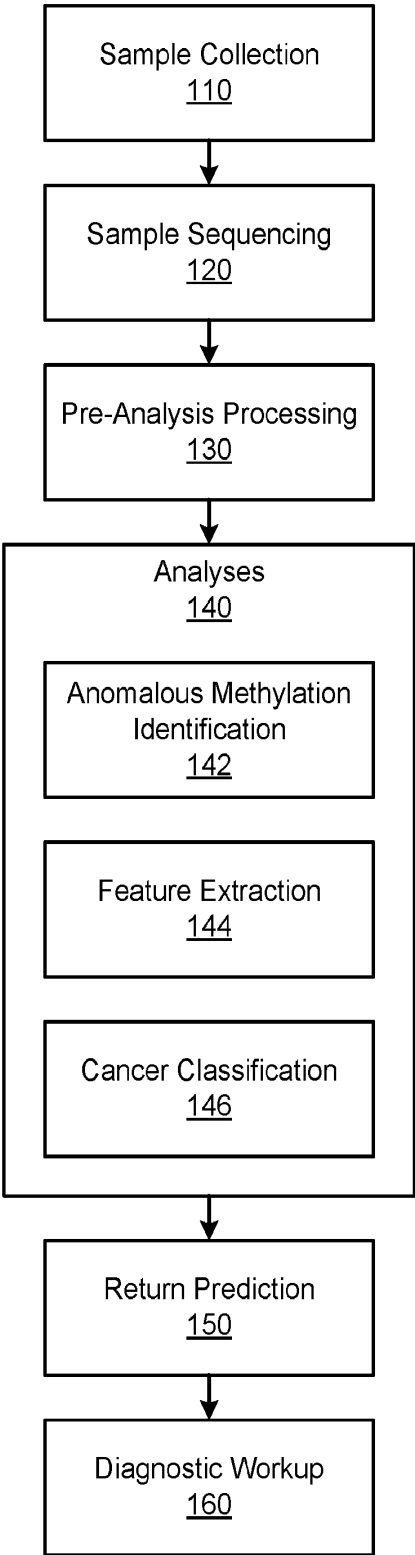
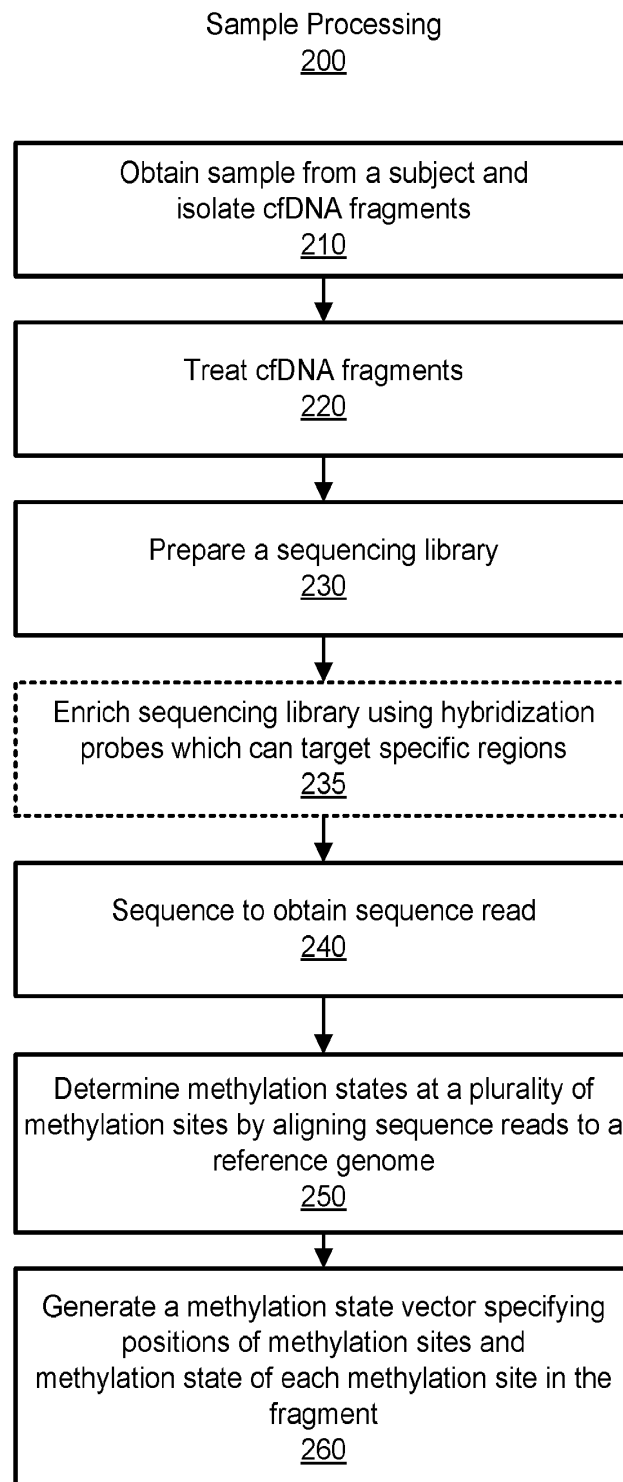


FIG. 1

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**FIG. 2A**

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Generate methylation state vector from
cell-free (cf) DNA fragment in sample
200

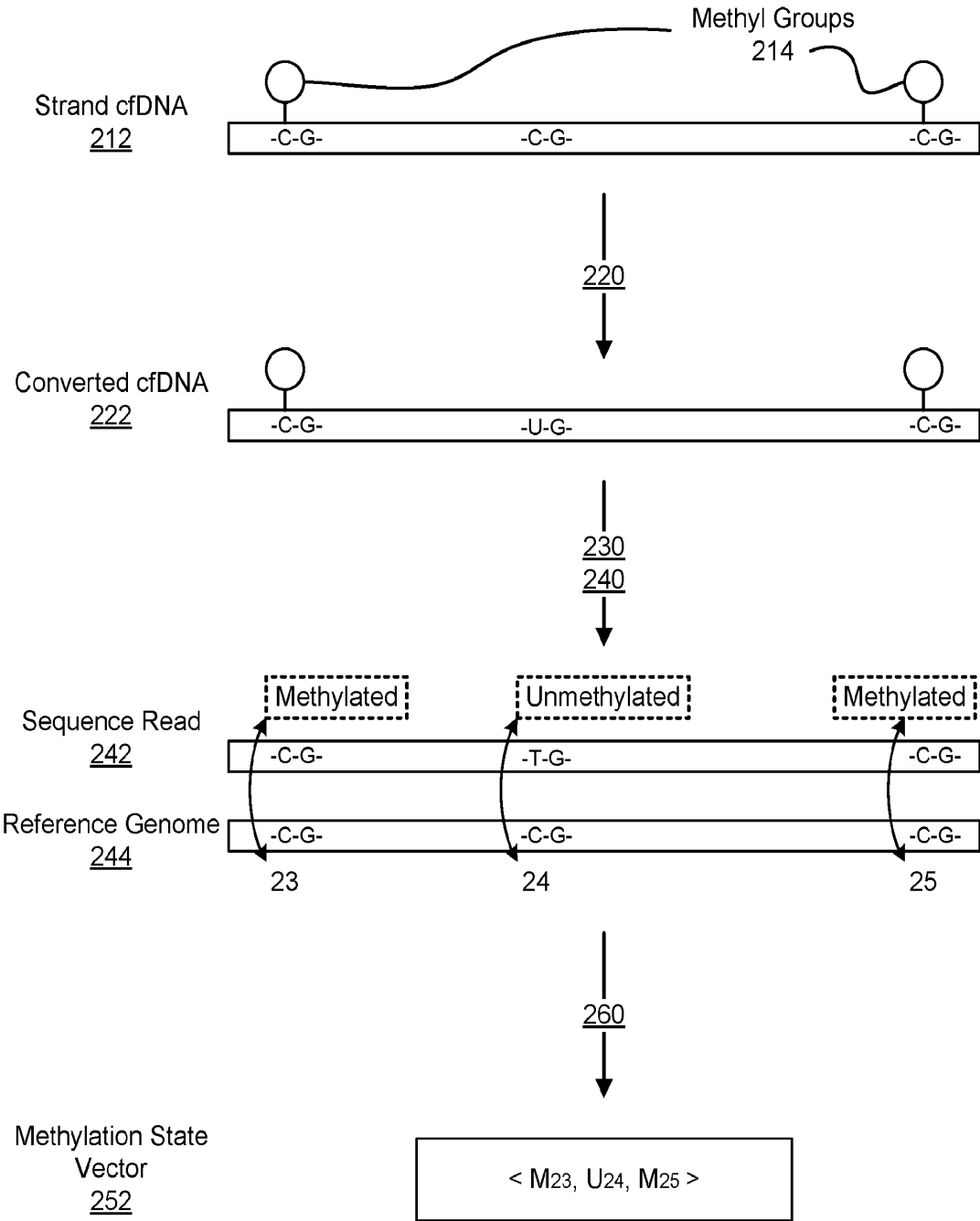
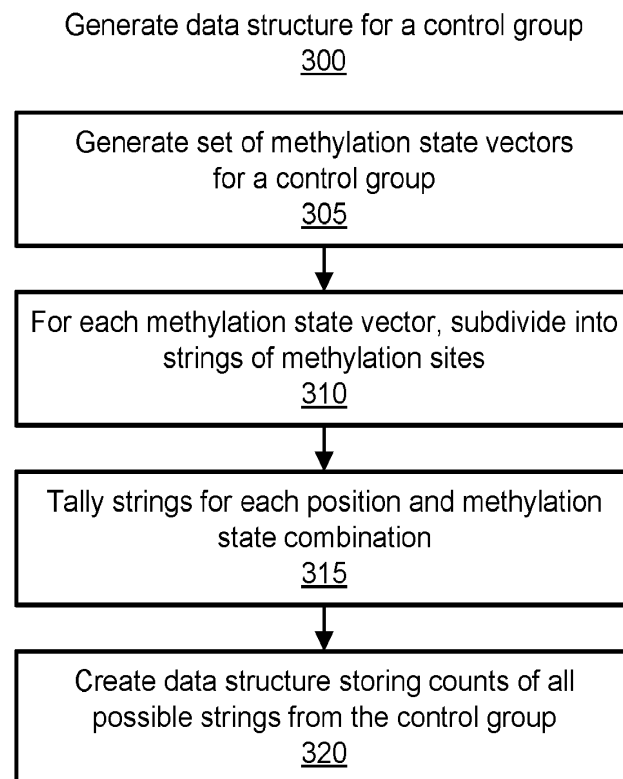


FIG. 2B

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**FIG. 3A**

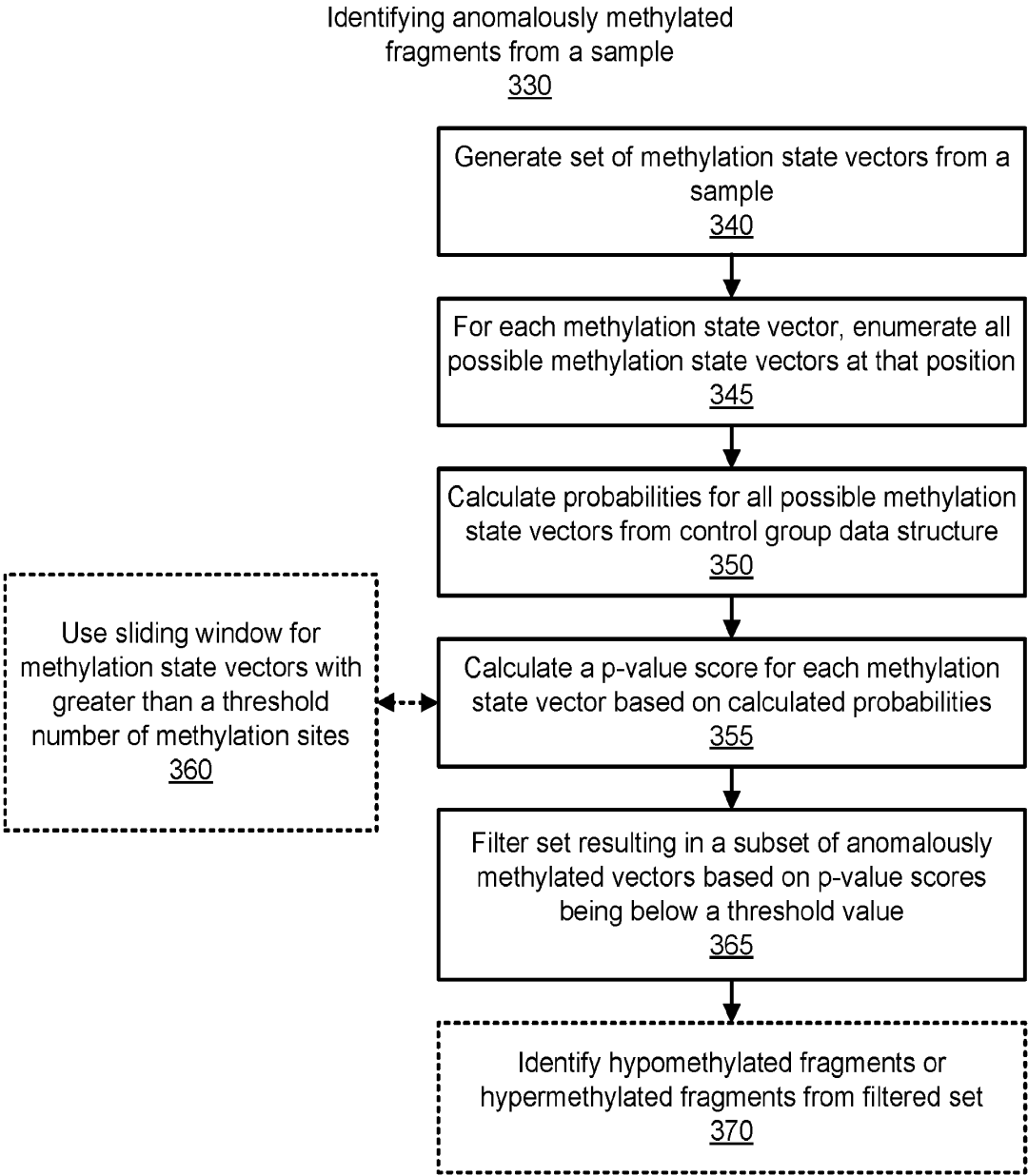


FIG. 3B

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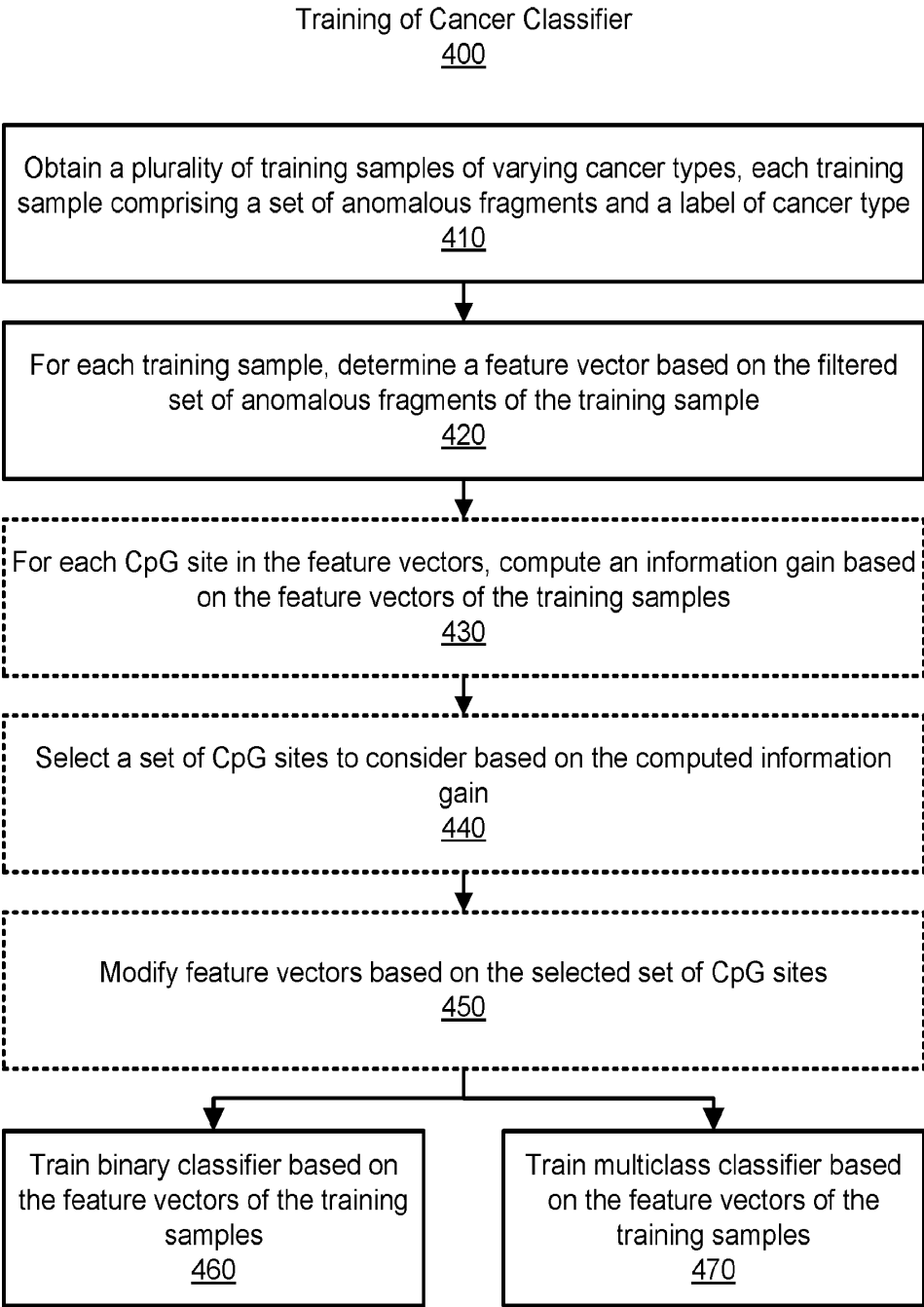


FIG. 4A

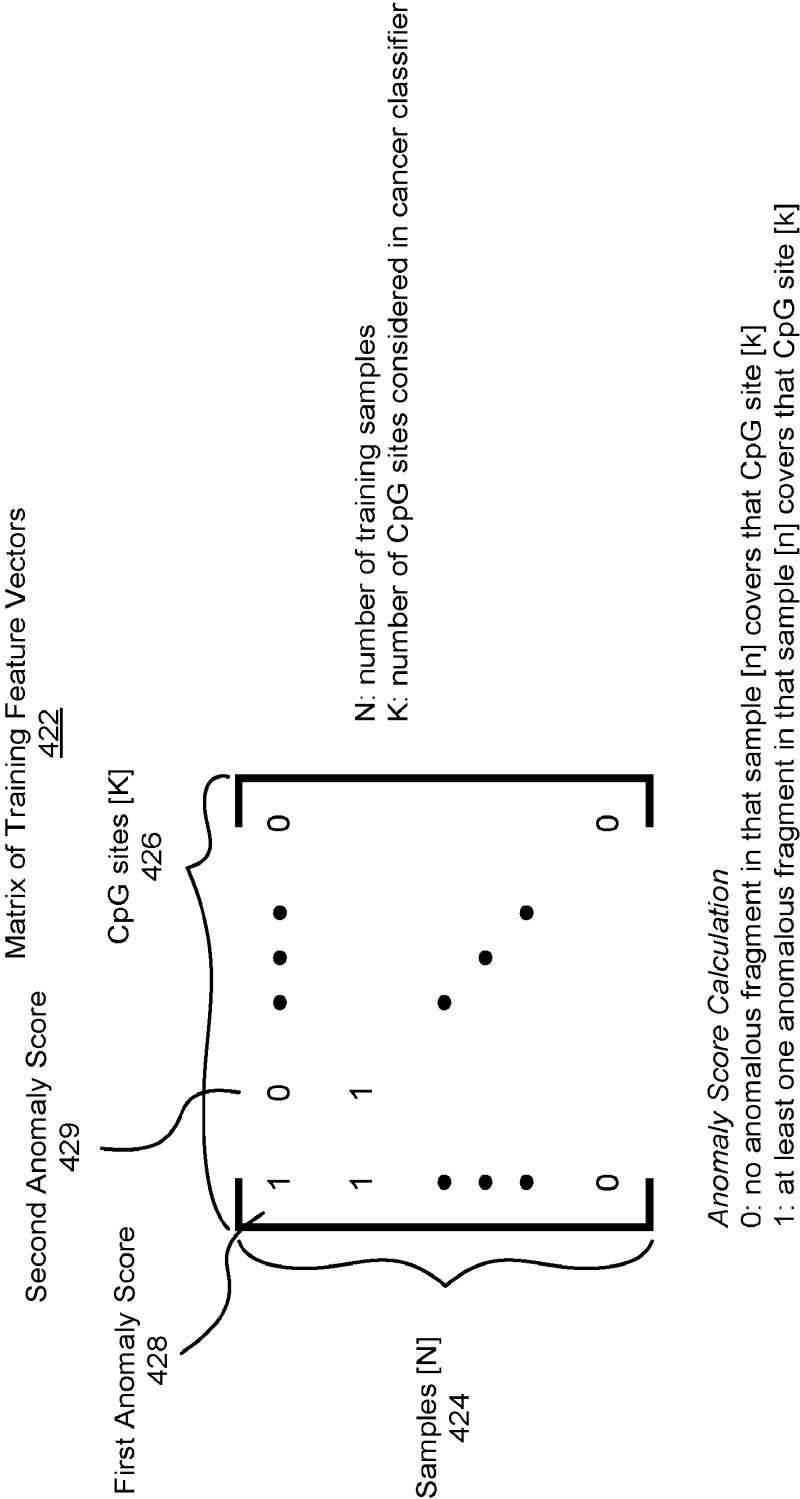


FIG. 4B

Training of Parallel CSO Classifiers
500

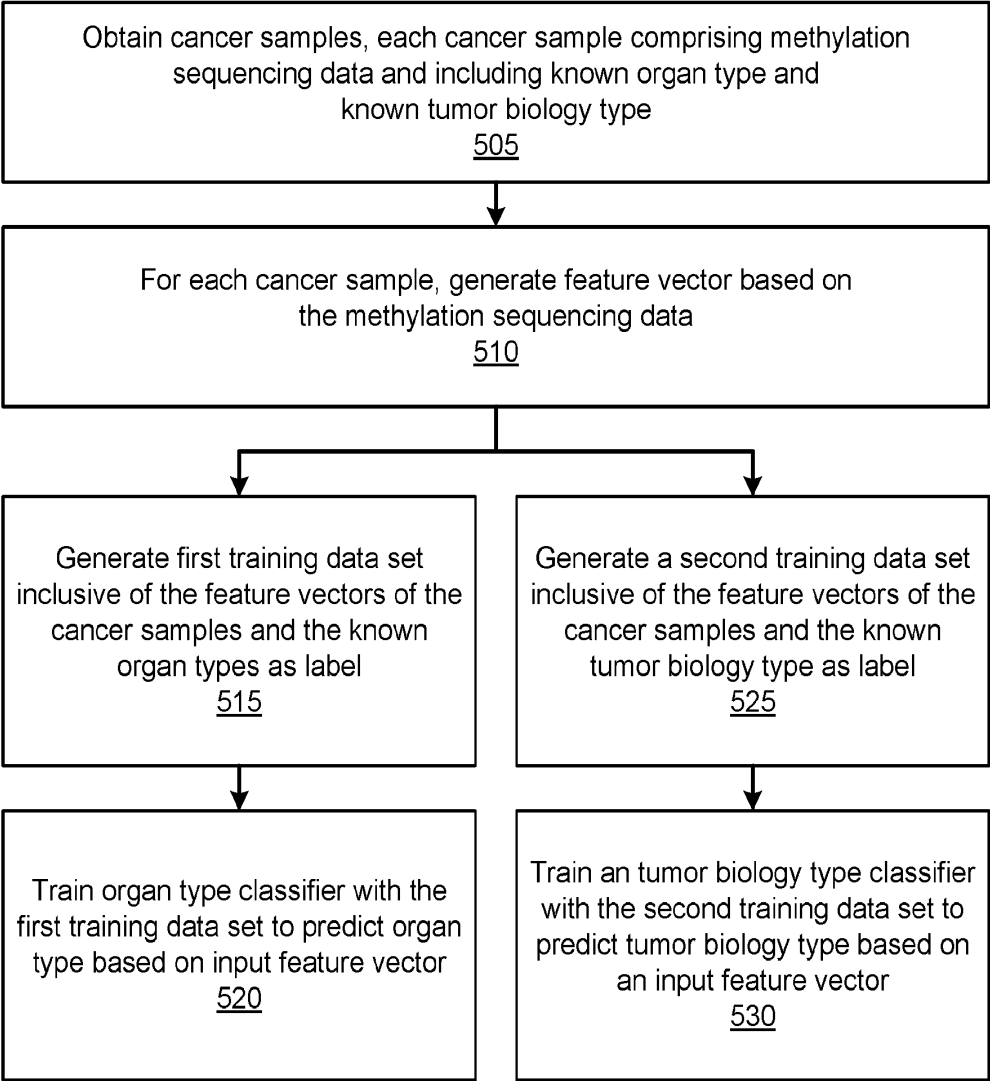


FIG. 5A

Deployment of Parallel CSO Classifiers
540

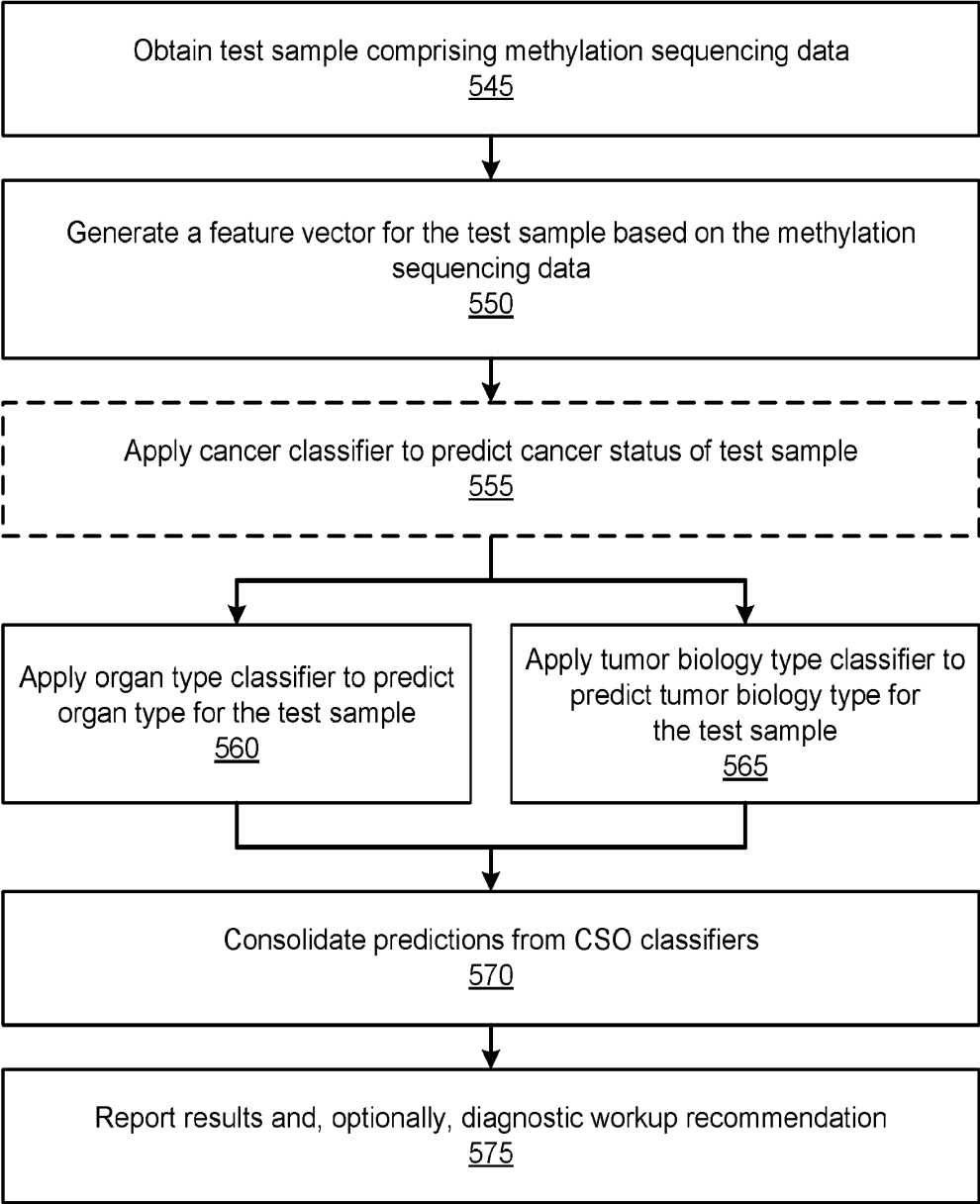


FIG. 5B

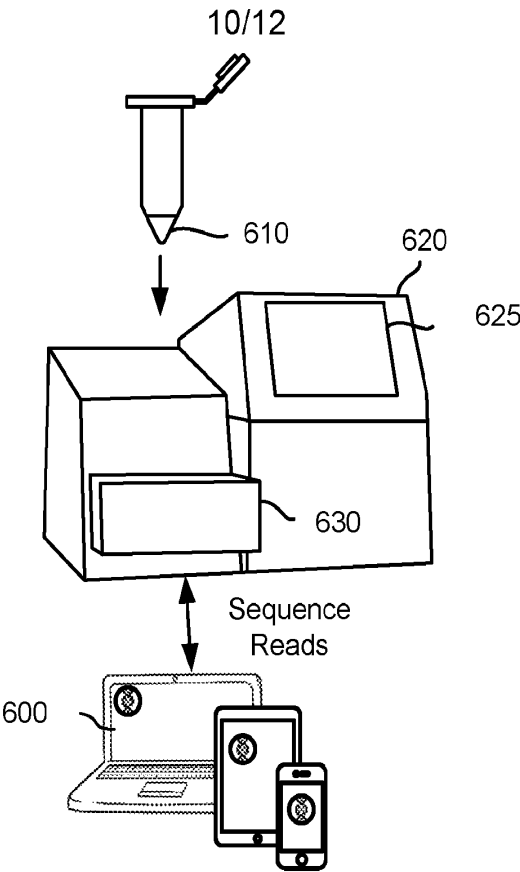


FIG. 6A

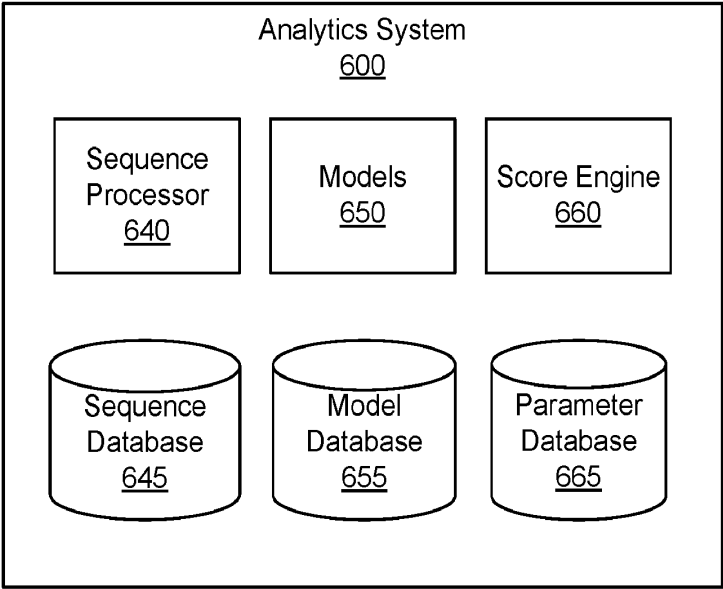


FIG. 6B

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prostate	1															1				36	
breast			1				2	1		1									158		2
ovary								1									4	54			1
uterus																1	39	5			
bladder_urothelial																12					
kidney								1							17	12					
colon_rectum	2							1		2		155				1					
liver_bileduct								1	1	3	30					3					
pancreas_gallbladder	1									3	116	3				1		2			1
upper_gi				1							94	3		1							1
lung	3		1		1	1		10	273	4	1	1		2	3			1	2		1
head_neck		1				2	2	85		1											2
anus	1					3	11							1							8
cervix						9	2	1								2					
thyroid																					2
sarcoma				9																	
melanoma_inv_skin			7												1		1				
blood_in_bm	1	181	1	1											1	2			2	1	
Total	8	183	9	12	1	15	15	98	281	104	127	34	157	20	20	46	62	162	37	18	
	false_positive	blood_in_bm	melanoma_inv_skin	sarcoma	thyroid	cervix	anus	head_neck	lung	upper_gi	pancreas_gallbladder	liver_bileduct	colon_rectum	kidney	bladder_urothelial	uterus	ovary	breast	prostate	prediction_only	

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prostate							2				1						88		22	
breast									1		2				1	19				1
ovary														16	8	2				2
uterus	1																			
bladder_urothelial													8							
kidney									1				7							
colon_rectum	1							2	2		85						1	1	1	
liver_bileduct									4	22										
pancreas_gallbladder				1				1	1	51	1						1	1		1
upper_gi								1	50	4										4
lung	2						7	157	2	1	1			2	1			1		5
head_neck		1			2	1	38	1	2										1	2
anus					3	5						1								
cervix					5															
thyroid																				
sarcoma				9				1		1						1	1			1
melanoma_inv_skin			3																	
blood_in_bm	1	86		1		1														1
Total	5	87	3	11	12	7	45	163	57	65	24	88	10	9	18	29	93	24	18	
false_positive																				
blood_in_bm																				
melanoma_inv_skin																				
sarcoma																				
cervix																				
anus																				
head_neck																				
lung																				
upper_gi																				
pancreas_gallbladder																				
liver_bileduct																				
colon_rectum																				
kidney																				
bladder_urothelial																				
uterus																				
ovary																				
breast																				
prostate																				
prediction_only																				

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FIG. 7

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melanocytic_neoplasm				1									6		
mesothelial_neoplasm												2		1	
mesenchymal_neoplasm											8				
hepatocellular_carcinoma				1						17				1	
mullerian_neoplasm				1					98					4	
squamous_cell_carcinoma				5	3	3	10	91						12	1
hpv_associated_carcinoma	1						80							1	
neuroendocrine_neoplasm				2		54								3	
transitional_cell_carcinoma					7									1	
adenocarcinoma	6			3	665	5	7	2	17	3		2	1	1	74
lymphoid_neoplasm	1			147					1	2		2		1	
plasma_cell_neoplasm			31												
myeloid_neoplasm		1													
Total	8	1	31	151	678	16	65	92	123	104	17	12	3	8	97
	false_positive														
	myeloid_neoplasm														
	plasma_cell_neoplasm														
	lymphoid_neoplasm														
	adenocarcinoma														
	transitional_cell_carcinoma														
	neuroendocrine_neoplasm														
	hpv_associated_carcinoma														
	squamous_cell_carcinoma														
	mullerian_neoplasm														
	hepatocellular_carcinoma														
	mesenchymal_neoplasm														
	mesothelial_neoplasm														
	melanocytic_neoplasm														
	precursor_only														
	other														

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melanocytic_neoplasm											1			3	
mesothelial_neoplasm													2		
hepatocellular_carcinoma						1					10			3	
mesenchymal_neoplasm						1		1		8				4	
transitional_cell_carcinoma									3					2	
mullerian_neoplasm	1				1	2		38						7	1
neuroendocrine_neoplasm	1							38							1
adenocarcinoma	2				1	5	367	3	1	1	1	1		50	3
squamous_cell_carcinoma				1	3	52	4	2		2				4	1
hpv_associated_carcinoma					37	8									
lymphoid_neoplasm	1	1		67			1				1				
plasma_cell_neoplasm		1	18												
myeloid_neoplasm															
Total	5	2	18	66	41	66	376	43	40	6	11	11	2	3	70
	false_positive														
	myeloid_neoplasm														
	plasma_cell_neoplasm														
	lymphoid_neoplasm														
	hpv_associated_carcinoma														
	squamous_cell_carcinoma														
	adenocarcinoma														
	neuroendocrine_neoplasm														
	mullerian_neoplasm														
	transitional_cell_carcinoma														
	mesenchymal_neoplasm														
	hepatocellular_carcinoma														
	mesothelial_neoplasm														
	melanocytic_neoplasm														
	precursor_only														
	other														

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FIG. 8